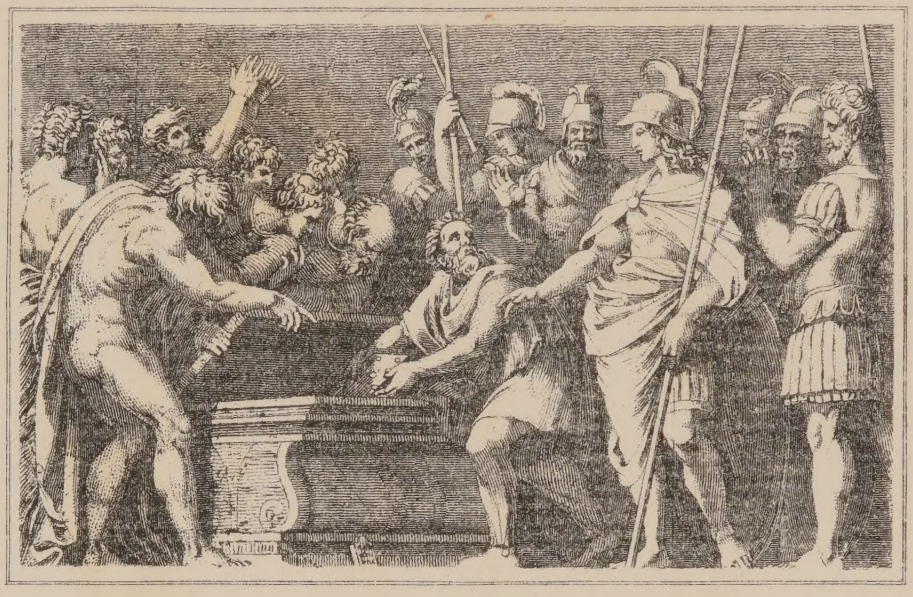

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THE LIVERPOOL

MEDICAL AND SURGICAL REPORTS.

1869.

THE

LIVERPOOL

MEDICAL & SURGICAL REPORTS.

OCTOBER, MDCCCLXIX.

EDITED BY

P. M. BRAIDWOOD, M.D.,

AND

REGINALD HARRISON, F.R.C.S.,

ASSISTANT SURGEON TO THE ROYAL INFIRMARY.

VOL. III.

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PREFACE.

It affords us very great pleasure, in issuing this Third Volume, not only to announce our satisfaction with the increased success which has attended the publication of the Second Volume of these Reports; but also to draw attention to the very various material presented by that portion of this volume which records the Transactions of the Liverpool Medical Institution and of the Northern Medical Society.

We regret the loss, by the removal to another sphere of labour, of Dr. Roberts, who so ably assisted in the Editorship of the former Volumes of these Reports.

We trust this Journal will still fulfil its aim of collecting, elaborating, and presenting in an interesting form, the large store of practical and scientific knowledge to be found in Liverpool and its neighbourhood.

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LIVERPOOL
MEDICAL AND SURGICAL REPORTS.

ON CHOREA, GENERAL AND LOCAL.

By THOMAS INMAN, M.D.,

PHYSICIAN TO THE ROYAL INFIRMARY.

There are two methods of arriving at a just appreciation of disease; the one consists in an examination of the symptoms presented during life, and, where practicable, an inspection of the body after death; the other is a diligent, and, as far as possible, exhaustive inquiry into its affinities. The first method long reigned supreme in medicine; the second is only now beginning to be recognised. We can readily understand the relative value of the two, if we compare disease to a man who appears before a physician to be examined for life insurance. As an individual, he is perhaps a model of his kind; every organ is in good condition, and the 'life' seems faultless. Nevertheless, a farther inquiry elicits that father and mother both died of phthisis, and that a brother and sister have suffered from the same disease. With this knowledge, the man is appreciated differently to what he would have been without. On the other hand, a man's family history may not have a flaw, and yet he may himself be suffering from the presence of consumption.

Medicine and surgery have for a long time been content to examine the case of disease before them, without inquiry into its family history, and have thus repeatedly misjudged it. To take an illustration, let us regard for a moment the old ideas which

prevailed about acute hydrocephalus. It was supposed to be highly inflammatory, and to require for its treatment active antiphlogistic remedies — purging, bleeding, general, local, or both, with a rigidly low diet; and the practice was persevered in, although systematic writers who endorsed it declared at the same time that it was unsuccessful. After a while, the disease in question was recognised as own brother to phthisis and scrofula, or tuberculosis; and a plan of treatment was inaugurated, allied to that adopted in those complaints. The result has been, that water in the head is now recognised as being, at least, as curable and avoidable as consumption and struma.

In like manner, other diseases have been subjected to a revision of opinion. Amongst them we may notice mania. At one time, it was believed that the fierceness of the onset, the ravings of the patient's tongue, the force of his movements, the perpetual action of his frame, all indicated acute inflammation of the brain. Although *post-mortem* inspection did not support the theory, its value was disregarded; the fact of a comparatively bloodless brain being explained away by its being attributed to *post-mortem* change. Nor did the fact that most maniacs died under the treatment induce physicians to give up the use of the lancet, calomel, antimony, opium, and low diet. Yet the theory of acute madness changed at once, when it was recognised that mania was own brother to starvation, and that it followed in the wake of famine, thirst, overwork, anxiety of mind, and misery.

Again, we may turn our attention to ordinary convulsions. When they were present, the doctor imagined that there must be cerebral excitement; and, as a consequence, many a poor child was treated with leeches. The painful sight was once common of an infant head, white, like wax, crowned with a coronet of leeches, each of which, as it heaved, seemed as if sucking the life-blood away, as indeed it was. But when it was recognised that convulsions were own brother to paralysis, that they came on just before the vital sands had ceased to run, or the heart ceased to beat, that they attended sudden loss of blood, and that a bloodless brain was their most common cause, leeches were recognised as

being pernicious; blood was no more taken, and a restorative plan of treatment was adopted.

Still farther, we may bestow a passing glance upon typhus, and yellow fever. At one time, they were regarded as indicative of exaggerated life-power. The patients seemed to be blazing away, like a huge bonfire in a gale of wind, and, to save the structure, the sticks composing it were carried diligently away. Bleeding, to an heroic extent; tartar emetic; calomel, to salivation; purging and the like were used to reduce the fever; yet the patients died in fearfully large proportions. But when it was recognised that these diseases were induced by poverty, starvation, and exhaustion generally, the practice of the physician altered; and quinine, with appropriate diet, now effects that which the heroic treatment failed to do.

We may fairly apply these remarks to the subject of chorea. Some twenty-seven years ago, I saw a bad case of this disease treated with purgatives, and the patient died. A *post-mortem* inspection revealed no adequate cause of death. Yet the corpse was on the table, and why it was there the most learned pundit present failed in explaining. Two questions were then repeatedly asked,—What is chorea?—Why does it kill? But, for a long period, there was no answer forthcoming. After a time, "the rule of thumb" was used, and the discovery made by the late Dr. Todd, that food and tonics cured St. Vitus' sooner than low diet and aperients. A farther approximation to a correct pathology was made, when Dr. Alexander Wood, of Edinburgh, called the attention of the profession to the subject of muscular affections generally. In a few words, he demonstrated that the irritability of muscles was in direct proportion to their loss in contractility, *i. e.*, the weaker the organ, the more subject it was to be influenced by irritants. Hence, convulsions and chorea were far more common in delicate children than in sturdy ones. As a corollary, he drew the inference that the best way to cure the two was by trying to make their victims muscularly strong.

With his ideas thus directed, the physician naturally turned to examine the affinities of St. Vitus' dance. He found it to be allied, on the one hand, to great bodily weakness, and, on the

other, to mental debility. Our memories teem with the almost pathetic descriptions, given by the old masters of our art, of the idiotic mental helplessness which frequently attended chorea. We recollect the stupid gaze of our own patients, their silly laugh, their stupid replies to our questions, or their apparent inability to understand our words. We recognise on their features the report of a tenantless brain, and are sometimes almost tempted to punish our patients for their vacuity and childishness. A sound active mind is very rarely, if ever, found in the chorea which affects children; each not only seems to be, but is, silly.

When we turn our attention to the muscles in chorea, we notice analogous facts. Physically, they are small in bulk, soft, and flabby, resembling wash-leather or bran-poultices, more than firm beef or mutton. If set to work upon something rational, they are unable to perform the duty, but fritter away what little contractile power they have with feeble efforts to do something that they are not required for. But it is not the nervous and locomotive organs alone that are affected; the heart, the stomach, and the bowels are alike implicated. The first is unable to carry on the circulation satisfactorily; the second calls for little food, because it cannot digest much; the third are either sluggish or irritable, and often blown up with wind. The natural inference from all this is, that the whole constitution is impaired for the time, the individual being unable either to feed or work well.

Now we know that a thoroughbred horse, with a good appetite, and strong muscles, has been known to keep on galloping under his rider until both have fallen from fatigue, of which the first dies at once; and we need not multiply instances to prove that excessive muscular labour, *e. g.*, as in swimming, pumping, etc., will kill the strongest men. If so, we cannot feel surprise that the exertion implied in the incessant movements of the limbs in chorea does occasionally end fatally. The cause of dissolution in the case first mentioned is thus explained; the patient was literally "tired to death."

When we still farther endeavour to ascertain the family connections of St. Vitus', we find it allied to palsy on the one hand, and convulsions, perhaps we may add dementia, on the other. We can,

for example, see little, if any, distinct difference between paralysis agitans, the shaking palsy of old age, and the movements of chorea. The jactitations of the last only differ from convulsions in their persistence, and in the absence of unconsciousness. In chorea and dementia, we see many points of resemblance; but we will pay attention chiefly to the most common occasion of the former, and a very frequent cause of the latter, viz., fright. Of all the mental emotions from which animals suffer, none is so powerful as fear. It paralyses the bird in view of the snake; the rabbit is palsied before the boa; the dog, however fierce, is cowed before a naked man in the darkness; and I have known a courageous spaniel die of fright at the close passage of a railway train. Once, in my youth, I experienced the depressing effects of this emotion, and have heard authentic histories of dementia produced by intense fear. The late Dr. Ferguson, and Mr. J. M. Arnott, late of the Middlesex Hospital, both indeed related in their lectures cases, of which they were personally cognisant, in which death could be traced to fear alone. One such case occurred close to where I lived, during the great storm of 1839.

The most common cause of chorea being fright, we can now readily understand that there should be in that complaint both cerebral and bodily debility. Whilst I write, there rises before my memory a scene in the museum of the Vatican. A series of unearthly sounds came upon the air; not shrieks of anguish, cries from pain, or calls for succour, but disjointed utterances, half shout, half scream, half whoop. Distant as they were, I recognised their cause; for the wife of an old friend, who suffered from universal chorea, often uttered the same sounds. All eyes turned wonderingly with my own, and presently we saw a lady, followed by a number of others, running along the gallery we were in, with the gait of a man suffering with shaking palsy, every limb jerking, the head tossed about from side to side, and the windpipe evidently taking part in the irregular movement. All that we could learn was that she was a distinguished Russian lady. Not long ago I read, in one of our monthlies, of a scene in the country of the Czar, in which an individual, at the imminent peril of her own life, saved that of a very distinguished individual. She was

handsomely rewarded; but the writer, who professed to be recording fact, added that the lady was so affected by the danger that she contracted therefrom a disease which would probably remain for life. In my own mind, I associate the story and the scene in the Vatican; but I would not coerce the reader to do so.

Having now ascertained approximately the affinities of Chorea, we ask ourselves, in what way, or upon what plan, the treatment should be conducted. Can we hope for a specific? Clearly not. We have, it is true, medicines which influence the muscles. Conium paralyses them, for example, and strychnine forces them to contract; but neither strengthen their fibre, nor add to their tone. In like manner belladonna, green tea, henbane and opium affect the cerebrum, but none of them enhance its quality. Can we improve a brain already upset by fright, by playing upon a patient's fears, and ordering a shower bath, a birch rod, or any horrible punishment? Clearly not. Fright upon fright is more likely to kill than cure. There being, then, no known specific, we are driven back upon general principles, and endeavour to improve the constitution as a whole, and the muscles in particular.

To fulfil the first indication, we employ unusually generous food, and abundance of it. By such simple means, I have seen a child, wholly unable to sit or stand on Monday, able to walk, sit, or stand comfortably on Friday. Nevertheless, instances like these are rare. Children with chorea do not enter our hospitals usually until they have become far too low to be raised up readily; and they require a long course of rest in bed, tonics, good diet, cod oil, and the like, ere they get well.

To fulfil the second indication, the only means we possess are, shampooing in the first instance, and regulated exercise when the muscular structures begin to regain their firmness. Of the first, the profession has, in my opinion, been too little regardful. Thought highly of by the Greek and Roman doctors, it has fallen into disrepute amongst their British successors, and is generally left to unlicensed practitioners. Yet it is of infinite value, and, when employed in conjunction with medicated unguents, is of

great importance. For example, I have, at the present time, under my care, at the Infirmary, a young woman who has local chorea. Her age is nineteen, and, as to build and general appearance, she seems in robust health. Some years ago, she had general chorea from fright, but recovered perfectly. The present affection, which involves all the muscles of the right upper extremity, shoulder-blade and clavicle, came on gradually, and at length became so severe that she was unable to continue her employment,—that of a milliner. As there was no indication that a general treatment was required, I directed the limb to be shampooed with equal parts of oil and turpentine; but, finding this of no avail, morphia ointment, a grain to the drachm of lard, was substituted, and amendment has steadily followed. The muscles have increased in firmness, and decreased in irritability; but some time will elapse before there is a complete cure.

But it is a question whether what may be called local chorea is ever wholly cured in an adult. In all the cases I have seen, it has been as persistent as the movements in shaking palsy, and all that the doctor can do is to diminish the jactitation to a minimum. We may, indeed, liken this complaint to the nervous tricks contracted by certain men and women, who are able to control them only so long as their minds are not wholly occupied by the circumstances influencing them. As soon as they forget themselves, the nervous trick at once reappears. In like manner, great mental emotion will reproduce or aggravate the local chorea. A lady, before referred to, could, for example, control the choreal spasms of the glottis, whilst with her husband and very intimate friends; but when speaking to strangers, or interested at the concert or opera with exciting music, the windpipe resumed its nervous tricks, and jerked out the most unearthly sounds.

A strange part of the history of local chorea, and a fact which seems to indicate the existence of a cerebral, rather than a local cause, is that, if the shaking limb is fastened to the body by bandages, and compelled to rest, the corresponding member will be affected. When this is the case, it is impossible to predict a recovery. There is not, indeed, any distinct indication for treat-

ment. Blisters to the nape, ears, or temples, bromide or iodide of potassium, opium, etc., may be tried, and may possibly appear successful, but only for a time. Nature may cure these affections, as she sometimes does epilepsy; but art, I fear, can do little, either to persuade or coerce her to the task.

TRACHEOTOMY IN THE TREATMENT OF CROUP AND DIPHTHERIA.

By P. M. BRAIDWOOD, M.D.

The science of modern therapeutics consists in a knowledge of the employment of remedies suitable "to obviate the tendency to death." We are unable, even with the *most recent* advances in this department, to define exactly the changes excited in the human economy by the exhibition of medicines. Hence, while endeavouring to rectify the phenomena induced by pathological processes, it is more in our power to prevent their occurrence by altering the conditions which predispose to them. The relation of tracheotomy to croup and diphtheria seems to be of this nature.

Croup and diphtheria, in their milder forms, and in their earlier stages, may be regarded and treated as local affections, as forms of inflammatory irritation of the upper part of the air passages; but, after passing this boundary line, they become constitutional affections, and exhibit the ordinary phenomena of blood diseases.

It has long been admitted that in febrile affections there is increased viscidity of the blood. More recently, it has been stated that, in this class of diseases, there is exhibited a morbid irritability of the colourless blood corpuscles. But to neither of these conditions can the fatality which attends severe cases of croup and diphtheria be attributed. The more immediate cause appears to be an altered gaseous constitution of the blood, due perhaps to imperfect oxygenation, perhaps to increased carbonisation, or to the presence of some foreign gaseous fluid.

In the treatment of the earlier stages, and of mild attacks of croup and diphtheria, there is considerable uniformity of opinion; but great difference of opinion still prevails regarding the treat-

ment of these diseases when they exhibit a very grave aspect. In the former class of cases, the use of diaphoretics, and of saline purgatives to relieve pyrexia, of expectorants and emetics to remove false membrane, and of moisture, in the form of diluents and of moist air, is found to be sufficient to combat the disease. When, however, all such remedies have been employed, when the practitioner has anxiously ransacked the Pharmacopœia, and the disease still progresses, he is forced to reflect more intensely on the probable cause of this serious condition, and to search for a possible means of relief.

Cases like the following illustrate the rapidly fatal and seemingly intractable nature of croup and diphtheria. A child, 3 years old, was brought to hospital forty-eight hours after she took ill. She exhibited the ordinary symptoms of croup, accompanied by bronchitis. Respiration was embarrassed, and at times extremely difficult. I performed tracheotomy, which relieved the symptoms; but about sixty hours after the operation, she had a spasmodic attack, which was fatal.

Again, a boy, aged 4 years, was admitted into hospital with the usual symptoms of diphtheria. He looked very well, and breathed with ease, except when asleep. Next day he was decidedly worse, and had several attacks of embarrassed respiration. In the evening he breathed with much difficulty, and had slight lividity of the face. I performed tracheotomy, which afforded relief; but the patient's strength gradually failed, and he died, about forty-eight hours after the operation, from asthenia.

How is it that these diseases are so rapidly fatal? One chief cause is evidently impeded respiration, and the consequent imperfect aeration of the blood. These are the precursors, probably the inducers, of death, and they lead to a further pathological process, viz., a morbid alteration of the constitution of the blood. This is proved by the enlarged cervical lymphatic glands, which are found after death to encroach on the surrounding parts. This complication is described by Dr. Aitken, thus:—"The lymphatic glands to which the lymphatics of the pharynx lead are found in cases of diphtheria to be larger, redder, and moister than natural,

and if the disease has continued long, they become brittle, pale, and of a brightish red colour on section—characteristic of inflammation of their substance." I have always met with this enlarged state of the cervical lymphatic glands in cases of croup and diphtheria when I examined the parts carefully. Sometimes these organs become so swollen as to meet in the mesial line in front, and they may thus render the operation of tracheotomy difficult. Paralysis of deglutition, which forms one of the most serious complications in such cases, is due, I think, most frequently to this mechanical pressure on one or both recurrent laryngeal nerves.

It appears reasonable, then, to suppose that tracheotomy, by relieving respiration and thus promoting sanguification, is an important aid in the treatment of croup and diphtheria. Moreover, by thus dealing with the important function of blood formation, this operation prevents the swelling of the cervical glands mentioned already. It is my firm conviction that, in the aggravated forms of these diseases, treatment should consist not alone of means which relieve symptoms, but of those which prevent the serious changes resulting from impeded respiration. The altered constitution of the blood arising from the difficult breathing causes the retention of certain impurities, as is shown by the frequent occurrence of albuminuria along with diphtheria. Dr. Sanderson is of opinion, that the albuminuria in such instances "is due to the morbid condition of the blood induced by the fever miasm." Tracheotomy, then, by allowing more easy and free aeration of the blood is a most important adjuvant in the treatment of croup and diphtheria.

The happy issue of the following case confirmed this opinion, and led to the inferences which shall be hereafter specified. A girl, aged 6 years, complained of the ordinary symptoms of cold, with sore throat, about a week before her admission into hospital; while four days later her voice became very hoarse and her respiration difficult. On admission, her pulse was 140, and weak; inspiration was accompanied by the characteristic croupy sound; and on examining her throat, the two tonsils and the uvula were seen to be covered with diphtheritic membrane. The throat was

diligently fomented, and nourishing food with wine was given in small quantities at short intervals. About four hours after admission, she had a very severe attack of coughing, breathing was laboured (all the respiratory muscles being used during inspiration), and her lips and face were somewhat livid. I performed tracheotomy, and this gave relief. The patient then had a tranquil sleep, which she had not had during the previous forty-eight hours. She improved during the two following days, and her strength was supported by drinking milk. Her pulse was 130. She expectorated no membrane. At this time, however, she complained of difficulty of swallowing; accordingly, while her mouth was kept moist by giving very small draughts of milk, she was chiefly supported by enemata of beef-tea and wine, administered every three or four hours. Poultices were also applied over the throat, and she sucked occasionally a brush dipped in Condy's fluid well diluted. She had slight bronchitis. Convalescence was uninterrupted. The enemata were continued till all difficulty in swallowing disappeared. The tube was finally removed from the trachea in a fortnight after the operation. The wound healed up in a few days afterwards, and the patient went out quite well, after having been in hospital three weeks.

The points in the treatment of this successful case, which deserve attention, are,—the facility of respiration afforded by tracheotomy, and the support of the system by nourishing food, while the diseased parts were kept at almost perfect rest.

While strongly recommending tracheotomy in the treatment of croup and diphtheria, the *time* at which its performance is likely to be advantageous should not be overlooked. It need scarcely be stated that in mild attacks of these diseases, and in cases which present *no* signs of imperfect oxygenation of the blood, this operation is not required; but the large mortality which attends severe cases of croup and diphtheria, even after tracheotomy, will be found most commonly to be owing to this operation having been performed too late. Tracheotomy is generally regarded as a last resource in the treatment of these affections; and as long as this view is held, the results of this operation will be far from satisfactory. Of what advantage can

possibly be to render respiration easy, to remove the impedi-ent to free oxygenation of the blood, some hours, or even days, fter the whole of the patient's blood has become so thoroughly eteriorated as to cause spasmodic attacks of coughing, to excite nlargement of the lymphatic glands, so that they cannot per-rm their functions properly, and to affect the nervous system s indicated by paralysis—while the patient's strength at the same me is failing? Tracheotomy may prevent, but it cannot amend, nis state of matters when fairly established. The trachea should e opened *early* if any benefit is to be looked for from the opera-on. In all instances relief is afforded by the operation; and, as n the hands of most surgeons, such cases die in spite of its erformance, the opinion still prevails that tracheotomy is of use nly in allowing the patient to slip smoothly away, instead of dying sphyxiated.

The difficulty lies in choosing the right moment, the early and uitable opportunity, for performing tracheotomy. When the ymptoms of impeded respiration and imperfect sanguification are xhibited, the operation should not be delayed. When inspiration s laboured, when all the respiratory muscles seem to be employed n the act of breathing, and when, with reddened face covered by weat, the patient tosses from side to side, clutching and gasping s if seeking everywhere for help, no time should be lost. A few ours later the symptoms of asphyxia are exhibited, and then the hances of recovery, even with a free access of air through an rtificial opening in the trachea, are very slight indeed. One nust not, however, wait in *all* instances till these signs of embar-assed respiration become fully developed; discretion must guide is. Better too early than too late.

As to the secondary affections which may follow tracheotomy, nd as to the difficulties which may attend its performance;—the omplications met with in this operation are pneumonia and bron-hitis. The latter is comparatively seldom met with after tracheo-omy, but it is a more common complication than pneumonia. It s easily guarded against by keeping the patient in a warm room, he air of which is moistened by steam; and it is best treated by pplying poultices over the chest. In my experience, however,

death after the performance of tracheotomy for croup and diphtheria (except where the virulence of the disease cuts off the patient) is most generally to be ascribed to careless nursing. In such instances it is caused, either by the plugging up of the tube with mucus or false membrane, or the child being allowed to sink from want of sufficient nourishment.

The operation itself is of easy performance, and may be said to be uncomplicated; but much of its success depends upon the subsequent nursing of the patient. It is most important in the treatment of such cases to pay attention to the following points: — to keep the tube pervious by passing a feather frequently through it, to moisten the mouth and throat with small quantities of fluid food, given frequently, and to support the patient's strength by nutritive enemata when deglutition is painful.

In the next place, as to the exhibition of chloroform during the performance of tracheotomy, and as to the arrestment of hœmorrhage during the operation. It is of the utmost importance that tracheotomy should never be performed in a hurry. If this operation is to be of service in the class of cases we have been considering, it can only be useful in a comparatively early stage of the disease; and it is quite useless to thrust a knife hurriedly into the trachea when the child is unconscious and livid. There should be no unnecessary haste shown in the performance of the operation; and, if so, why not relieve pain by giving chloroform? Chloroform does not render the condition of the patient any worse as regards the constitutional affection, and it assists the surgeon greatly by keeping the patient quiet. One further advantage I have found to result from the exhibition of chloroform is, that the child by this means is forcibly sent to sleep, and receives refreshing rest, which he has not had for some days previously. This artificially induced sleep is very often followed, after some food has been taken, by a natural slumber.

It is a debatable question, whether or not time should be spent during the performance of tracheotomy in arresting hœmorrhage. Such bleeding is, for the most part, venous, and is formidable in consequence of the dilated condition of the cervical veins. When the trachea is opened, this excessive engorgement at once

ubsides; and it will commonly be found that the hœmorrhage eases. Professor Trousseau, however, states that he has seen eath caused by blood passing into the trachea during the operaion, and he strongly urges the *complete* arrestment of the bleedng before the trachea is opened.

In conclusion, the following table of cases of tracheotomy, perormed for the relief of croup and diphtheria, and derived from very arious sources, furnishes strong evidence in favour of this operaion, even in some of the severest forms of those diseases. This able refers to the experience of surgeons in private practice, and o the results of such cases treated in hospitals. The total umbers show the proportion of three recoveries in every eight ases.

Table of Cases of Tracheotomy for Croup and Diphtheria.

Authors.	Total of Class.	Number of Recoveries.
Prof. Spence, Edinburgh	87	28
Dr. G. Buchanan,* Glasgow	31	11
Prof. Roser, Germany	42	19
Dr. Jaffé, do.	294	65
Dr. Barthez, Paris	142	110
Dr. Voss, America	14	5
Dr. Fock, Germany	24	10
Dr. Isnard, France	4	2
Dr. A. Jacobi	62	13
Prof. Steiner	52	18
M. Baizeau, Paris	12	4
Prof. Titanus, Amsterdam	80	28
M. Archambaud	62	22
M. Bourdillat	16	10
Total	922	345

* "During the last seven years I have been called to upwards of 40 cases f croup and diphtheria, as a consulting surgeon. In 31 of these cases I erformed tracheotomy, and of these 11 recovered perfectly. The cases I efused to operate on were either *in articulo mortis*, or were in a stage, when

I saw them, when there was apparent hope of recovery by perseverance in medical treatment. But what is remarkable is, that of the whole none recovered except the 11 saved by tracheotomy. And it is this consideration which has determined me to undertake the operation in the future, even earlier in the stage of the disease than I have previously ventured," etc.—From *Transactions of St. Andrew's Medical Association*, vol. i., p. 161, 1868.

A CASE WHERE THE DESCENDING COLON WAS OPENED SUCCESSFULLY FOR VESICO-INTESTINAL FISTULA,

By JAMES HAKES, M.R.C.S.,

SURGEON TO THE ROYAL INFIRMARY.

THOMAS F., aged 20, a puny-looking lad, was admitted into the Royal Infirmary in the month of March, 1869. His history was as follows.

Five years ago, he received a kick behind. This was followed by swelling about the anus, which gradually subsided, without inconveniencing him further.

Three years ago, he experienced some difficulty in passing fœces, which gradually increased, up to twelve months ago, when he noticed some discharge from the rectum, and that fœcal matter passed in small quantities by the urethra. During the last twelve months, his condition has gradually become worse. His state on admission was as follows. He had a very care-worn appearance, and was much emaciated. Fœces, in considerable quantity, were mixed with the urine, and flowed from the urethra. This, together with the passage of flatus into the bladder, was productive of most excruciating pain. Urine, with fœces, also passed from the rectum. On introducing the finger into the rectum, a constriction could just be felt, and beyond it a ragged ulcerous surface, which doubtless was the point where the communication with the bladder commenced. On an examination with a speculum, the mucous membrane of the rectum was observed to be in a very unhealthy condition. A sound introduced into the bladder could be passed into the rectum. No other plan of treatment suggested itself than that of opening the descending colon, the communication between

the bladder and the bowel being evidently so extensive, and so far removed, as not to permit of any attempts at remedying it by a plastic operation. By opening the bowel, and forming an artificial anus above the point of communication with the bladder, it was hoped that the fistulous communication would contract. At all events, the operation held out an almost certain hope of alleviating the more distressing features of the case, and the pain attendant upon the passage of a large quantity of both fœces and flatus into the bladder.

The nature of the disease was somewhat doubtful.

It was clearly not malignant; and it was very questionable whether the injury received five years previously had anything to do with the disease, which did not manifest itself until two years subsequently. There were no symptoms of constitutional syphilis, or any history of the patient having suffered from dysentery. The ulceration was of a very unhealthy nature, and of the character often observed in strumo-syphilitic subjects.

On March 30th, 1869, the descending colon was opened. As the space between the last rib and the crest of the ileum was unusually small, the operation was not concluded without some difficulty. The incision commenced at the outer edge of the erector spinæ, and was carried outwards, and slightly downwards, to the extent of about four inches. There was hardly any hæmorrhage. Some difficulty was experienced in finding the bowel, as it was quite contracted, and embedded in sub-peritoneal fat and cellular tissue. The gut, on being opened, permitted the escape of some thin fæculent matter. The cut edges of the intestine were fastened to the wound by several silver sutures.

After the operation, the patient was threatened with an attack of peritonitis, which, however, subsided under treatment. Fœces at once commenced to flow through the wound, and the distressing symptoms already alluded to were most speedily mitigated.

August 7, 1869, rather more than four months after the operation, the patient's condition is as follows.

He has certainly gained flesh, and has a much more healthy and natural appearance. He takes his food well, and is quite free from all those distressing and painful sensations which have

already been described. His general health and condition have vastly improved since the operation.

The fœces all flow through the artificial anus. The urine is perfectly clear and normal, and is almost all naturally passed by the urethra, a small quantity passing by the rectum.

Further comment on the case is hardly necessary. The only plan that could be adopted has quite fulfilled the hopes that were entertained, and has placed the unfortunate patient in a position of comparative comfort.

An abstract of a case, where the operation was performed under somewhat similar circumstances, recorded by Mr. Harrison, will be found in another part of this volume, amongst the "Proceedings of the Liverpool Medical Institution."

CASES OF TRACHEOTOMY,

WITH REMARKS,

By T. GULSTON WOLLASTON, M.D.,

SURGEON TO THE SOUTHERN HOSPITAL.

The following cases of tracheotomy have recently occurred in my practice at the Southern Hospital, and I trust that the readers of the *Liverpool Medical and Surgical Reports* will agree with me in considering a condensed report of them worthy a place in that journal.

In the two first cases, the operation was performed for the relief of symptoms due to what I believe to have been syphilitic disease of the larynx, although, in the case of J. E., the patient attributes his illness to a cold contracted during a long stay at the wheel, in wet clothes, while crossing the line, about a year ago. The second case, that of J. F., was purely a syphilitic affection.

In both instances, the operation had to be repeated after an interval of a few months only, in consequence, apparently, of a return of symptoms due, possibly, to the same disease.

J. E., aged 44, a Swedish seaman, was admitted into the Hospital on June 5th, 1868. At the age of 29, fifteen years ago, had a chancre on the upper surface of the prepuce, which yielded to the application of sulphate of copper, in the course of a fortnight. He neither took mercury nor medicine of any kind. Just as the sore was healing, a bubo made its appearance in the right groin ; and this, as well as a subsequent one on the opposite side, ran an ordinary course. Nine years ago, had an attack of gonorrhœa, for which he appears to have taken no medicine whatever, and which lasted some three months. Eighteen months ago, had an attack of what he was told was pleurisy. With these

exceptions, states he has always been a healthy man. Says he never had a skin eruption; but this is doubtful. Twelve months ago, had an attack of sore throat, which has continued more or less ever since, being latterly accompanied by difficulty of breathing, and much hoarseness, and cough.

I saw him on admission. He was then almost pulseless, very livid, and only giving an occasional gasp. As there was no time to lose, I at once plunged a scalpel into his trachea, when, a few artificial respiratory movements being made (the opening in the trachea being meanwhile held open with a pair of dressing forceps), breathing was restored. After all bleeding had ceased, and a small quantity of blood, which had been sucked in with the first few inspirations, had been coughed up, an ordinary double tube was easily inserted into the somewhat large wound in the trachea. On examining the throat, several ulcers are seen on the fauces and soft palate; with the aid of the laryngoscope, the upper portion of the glottis is found to be thickened and highly vascular, and a well-marked syphilitic ulcer exists on the left cheek, with sundry patches of copper-coloured psoriasis on the arms and chest. The patient was placed on a liberal diet, and gr. $\frac{1}{16}$ of hydr. perchlor. with decoct. sarsæ. co., administered thrice daily. Under this treatment he rapidly improved, the ulcer on the face healed, the eruption disappeared, the laryngeal symptoms abated, the voice became stronger and clearer, and air in considerable quantities entered the chest by the natural passage, the only drawback being occasional attacks of dyspnœa, due to the separation of portions of the tracheal rings, to facilitate the expulsion of which it was at times necessary to remove the tube with as little delay as possible.

As he was unwilling to have the tube removed altogether, he was ordered to keep the orifice closed with a cork during a portion of the day.

In March, 1869, he was re-admitted, suffering from an attack of pleurisy on the right side. He had been employed as a rigger, and consequently greatly exposed to cold and wind. The voice was almost as good as ever it was, and the breathing perfect, but still he felt unwilling to part with the tube.

In the end of April, when the pleuritic attack had passed off, the tube was removed for a short time, and, on an attempt being made to re-introduce it, this was found to be impossible, on account of the rapidity with which the orifice had closed.

During the month of May he continued well, the voice having almost regained its accustomed strength and clearness; but, on careful examination, the air appeared to be entering the chest through a somewhat constricted trachea.

The following month, the old laryngeal symptoms made their appearance, and, on the 21st of June, it was found necessary to re-insert the tube, which he has continued to wear ever since.

Now this appears to have been a secondary syphilitic affection, following a soft or non-infecting chancre, accompanied also by suppurating bubo; for one can scarcely imagine a true Hunterian chancre yielding to the local application of sulphate of copper in a fortnight. Truly, I may be met with the argument, But the attack nine years ago, which he calls gonorrhœa, was in reality a case of indurated Hunterian chancre in the urethra; and this I am disposed to think was the case.

The second case is one of a purely syphilitic nature. J. F., aged 47, seaman, had a chancre fifteen years ago; says it felt hard and bony to the touch; took mercury to ptyalism, and was well in two months; had no suppuration in the groin, but says the glands were enlarged and tender. Ten years ago, had gonorrhœa and soft chancres; was treated with mercury, and recovered in six weeks. Four years ago, had sore throat and syphilitic rheumatism; treated at sea with iodide of potassium, and soon recovered.

On admission, September 5th, 1868, he was suffering from sundry ulcers on the face and lips; much huskiness of voice, and difficulty of breathing, accompanied by frequent attacks of spasmodic cough. There was also considerable ulceration of the throat, but no skin eruption. He was placed upon the biniodide of mercury, and fumigations to the throat. With this treatment, the ulcers quickly improved, but fresh ones appeared over the nasal bones, and these ultimately necrosed, and were removed. Meanwhile, the laryngeal symptoms became aggravated, and it was found necessary to introduce a tube into the trachea, early in

October. This was retained for three months, and then removed, as the laryngeal disease appeared to have subsided.

In April, 1869, he was re-admitted, suffering from a return of the old symptoms, and a well-marked indurated sore at the corner of the mouth. The perchloride of mercury with sarsaparilla was administered with benefit for a time, but yet the laryngeal symptoms did not yield, and, at his urgent request, the operation was repeated on May 23rd. He was discharged, wearing the tube, July 10th.

In this case, like the last, much inconvenience was experienced from necrosis of the tracheal rings, giving rise, until their expulsion could be effected, to severe and sudden attacks of dyspnœa.

T. C., aged 7 years, admitted March 9th. The friends stated that, a few minutes previous to admission, he was at play in his usual health, when, without the least warning, he fell to the ground in a state of suffocation. As death was imminent, I at once proceeded to perform tracheotomy, which was rendered extremely difficult, owing to the patient's struggles, and the great depth of the trachea. The opening in the air tube was made large, as I considered, from the history of the case, that the symptoms were probably due to the presence of a foreign body, although I could not ascertain that the lad had anything in his mouth at the time of the attack. Nothing, however, could be detected on careful examination, so an ordinary double tube was introduced, and the boy placed under the influence of opium. The operation was followed by most acute tracheitis, necessitating the cleaning of the tube every two hours. The discharge was purulent, and not at all resembling the membranous exudation of true croup. For many days the boy's life hung on a thread. Deglutition was so difficult and painful that the patient refused all nourishment, and had to be kept alive by means of brandy and beef-tea injections by the rectum; and I would embrace this opportunity of thanking Mr. Davies, the house-surgeon, for his constant and unremitting exertions, both by night and day, which conduced so much to the successful result.

On March 27th, the tube was removed; by the 29th, the wound had completely healed; and on May 22nd he was discharged cured.

Considerable hoarseness existed for some time; but, at the present date, the voice has almost regained its former strength and clearness. Still, I believe there remains some amount of narrowing of the trachea, due probably to the excessive inflammation following the operation.

Judging from the suddenness of the attack, and the absence of any precursive symptoms, I am inclined to look upon this case as one to which Dr. Mason Good has given the name laryngismus stridulus.

The fourth and last case to which I shall allude, is one in which the operation was performed for the relief of true croup.

M. O'D., aged 7 months, was admitted on June 24th, croupy symptoms having existed for some days previously. As the case was one of great urgency, tracheotomy was immediately performed by Mr. Davies, the house-surgeon, and a good sized child's tube introduced. Instant relief was experienced, the child at once taking the breast freely. False membrane was discharged, at first in considerable quantities, until July 2nd, but the tube could not safely be removed until July 18th. On the 20th, the mother removed the child, contrary to advice, as she considered her quite well. Three days later, on the 23rd, the day being an extremely wet one, the infant was taken to a distant part of the town, and, in the evening, a slight return of the symptoms appeared. The mother left it in the hospital for the night, but removed it, at her own request, the following morning, as the little thing was somewhat better. On July 26th, she again brought the child to the out-patient department, still, however, unwilling to permit its re-admission as an in-patient. Although the breathing was not very oppressed, the patient was evidently sinking from extension of the disease, and we heard that death took place on the 29th. One can but regret the excessive stupidity of the mother, as, had she consented to the child's re-admission on the 23rd, its life might possibly have been saved.

In disease of the larynx, depending on a syphilitic taint, if the symptoms do not yield to treatment in a short time, the sooner the organ is rendered perfectly quiescent the better; for we shall find that mercury, and other remedies that before scarcely acted at all, now most readily respond to our wishes.

In operating in cases in which it is necessary that the tube should be worn for a length of time, where we wish to place the larynx in as perfect a state of rest as possible, it is desirable that the opening in the trachea should be as small as is compatible with circumstances; for, if we divide too many of the rings, we give undue play to the tube, during the act of deglutition, etc., and thus set up a source of inflammatory action, leading to the formation of matter between the cartilage and its investing membrane, resulting in the rapid death of the former, and the subsequent inconvenience and danger arising from its expulsion.

In chronic disease, I would urge *early* operative interference; for, by so doing, we place the organ in a far better state for recovery, and avoid all risk of sudden death from œdema, spasm, etc., a result I have seen occur in more instances than one, and in cases, too, in which the patients appeared to be improving under the treatment employed. This remark applies also to croup and diphtheria, for, although my experience is small, extending only to some half dozen cases, and the results have been extremely unsatisfactory, I believe that, had the friends consented to the operation at an early stage of the disease, the chances of a successful issue would have been much greater.

I would add a word with regard to the form of tube to be employed. The ordinary round double instrument, perforated on its upper surface, is much to be preferred, and introduction is greatly facilitated by the incision in the trachea being kept open with a pair of Weiss' "wound forceps." The "spring tube," the outer one of which is split, is very pretty in theory, but in practice we shall find that, when the finger and thumb are applied behind the shield, in order to compress the blades, the instrument is not of sufficient length to reach the trachea, especially in children.

In the after-treatment, when the tube has been removed for the purpose of cleaning, etc., its re-introduction is much assisted by passing it over a bent probe; and, for the removal of discharge, an ordinary pipe brush will be found to answer best.

CASE OF MOLLITIES OSSIUM,

By JAMES TURNBULL, M.D.,

PHYSICIAN TO THE LIVERPOOL ROYAL INFIRMARY.

The following well-marked case was admitted into the Infirmary on the 26th of December, 1868, and is still detained there in consequence of a fracture of the thigh. The patient had improved very greatly, and had begun to sit up, and even use crutches, when he had, on the 15th of May, a fall which proved the fragile condition of the bones by the thigh bone being fractured in the upper third. By similar slight accidents, the other thigh had been fractured six years previous, and the right humerus two years previous.

Mollities ossium, or osteomalacia, is a rare and curious disease, which closely resembles rickets in some of its prominent features, but yet is in reality essentially a different disease. They both arise from perverted nutrition; but mollities ossium is a degeneration of the bony tissues, whilst rickets is the result of arrested development in childhood, unattended with pain, and can generally be remedied. The degeneration in mollities ossium is accompanied with separation of the inorganic from the organic constituents of the bones, and the relative quantity of the earthy matters is diminished. The affected bones are not only fragile, but so soft that they may be readily cut, and the section presents the appearance of a reddish soft gelatinous or greasy matter.

Little seems to be known of the cause of this disease, beyond the fact that many of those who have been affected appear to have suffered from privations, anxiety from precarious means of existence, cold and damp; but others have suffered from none of these influences.

Mollities ossium is much more common in females than in

ales; and Mr. Durham has shown, in a paper in *Guy's Hospital eports*,* from an analysis of 145 collected cases, that only 13 ere males, and 132 were females. The disease would also seem be connected with child-bearing, for 91 of the females were st affected during pregnancy, or soon after child-birth. He has so shown that the great majority, both of males and females, gan to suffer when between the ages of 25 and 35.

Pain seems to be the earliest symptom of the disease, and it is a peculiar deep-seated character, as if in the heart of the nes, being also increased by motion, and by pressure on the fected parts. It has, however, been often mistaken for rheuatic pain, in the early stage; but, as the disease advances, the nes bend under the contracting power of the muscles, and the tient becomes a sad distorted cripple, and liable to have his nes broken from the slightest injury.

Though the disease may be arrested and delayed in its progress, e prognosis is very unfavourable; and, in some cases, death has ken place from asphyxia, the patient having become unable to flate the lungs, owing to the soft and yielding condition of the s.

The treatment should be essentially tonic, and should be rected to the improvement of the nutritive functions. There as a very marked change for the better in the condition of this tient under such treatment. He took cod liver oil, and also a nic mixture, with phosphate of iron and phosphoric acid, and so some phosphate of lime. It is doubtful, however, if phosate of lime could be of any service, for there was from the st an excess of phosphates in the urine, so that, in this as in her cases of mollities ossium, it would seem that there must ve been a want of power to assimilate the phosphate, rather than deficiency of it in the system.

Joseph Sharp, an intelligent little man, 32 years of age, was mitted under my care on the 26th December, 1868. He had en always rather delicate, and, before his illness, was only five et nine inches in height. His father brought him up as a vege-

* 1863-64.

tarian between the age of 15 and 18, and when 20 he had small-pox, which weakened him so much that he afterwards walked with the assistance of a stick. He had been in business as a shoe manufacturer, but had latterly been only a clerk. He began to have pains in the limbs about seven years ago, and about two years before admission his bones began to bend. The pains, which were deep-seated, commenced in the lower extremities; but the fore arms were the first to bend. He fractured the right thigh six years ago, from slipping on orange peel; and he had also a fracture of the right humerus, from a fall, two years before admission. When admitted, he was thin, weak, and pallid, and so helpless that, for many weeks after, he was unable to raise himself in bed. The fore arms were very much curved, and the bones painful on pressure and motion. The lower extremities were twisted and deformed, the left clavicle bent; the spine had sunk down, inclining forwards, and, in consequence of this, the ribs were in contact with the crest of the ilium on both sides. He had also lost about five inches of his original height. He had lost all his teeth, which had dropped out. The functions were natural, except that digestion was weak, and he had been troubled with heartburn and acidity. He improved greatly with good diet, and the warmth and nursing of the Infirmary. He got fat with this, and the phosphate of iron and cod liver oil treatment, and his strength increased, so that he began to use crutches, when he had the misfortune to fall, on the 15th of May, fracturing the thigh. He has, however, maintained his ground fairly, notwithstanding, and the fracture has united. The urine was examined by Mr. Brown, Lecturer on Chemistry at the School of Medicine, when the patient was admitted, and his report on it is as follows:—

The first specimen examined was turbid; the deposit consisted of urates and phosphates, and the urine also contained excess of phosphates in solution.

The second specimen, passed a week later, was clear and acid; of specific gravity 1020. It also contained a large quantity of phosphates.

In both samples, nitric acid developed a red colour, and they

were accordingly compared with the remarkable case detailed by Dr. H. Bence Jones (*Phil. Trans.*, 1848, p. 55). In that case, the urine contained an albuminoid substance, which rendered the fluid opaque when boiled. When nitric acid was added, and heat applied, the urine became clear, but it *solidified on cooling*. The substance was precipitated by ferrocyanide of potash, and somewhat resembled gelatine, but still more the teroxide of protein obtained by the action of chlorine upon albumen. Dr. Jones had a suspicion of chlorine in the urine; and he named the substance "deutoxide of albumen."

The urine contained a sediment of phosphates and of oxalate of lime.

In the present case, several samples of urine were examined, but did not yield any albuminous substance. Two samples were examined very carefully for chlorine, and did not contain a trace.

In Dr. Jones's case, which was acute, the mineral salts of bone, and also an organic substance, were passed in the urine.* In the present case, the mineral salts of bone are found in the urine in excess, while the organic matter does not appear to be passed entire, although it may be removed, as urea and other products produced by oxidation in the ordinary process of disintegration of albuminous tissues.

* The name "deutoxide of albumen" must not be understood to indicate a basic substance of definite composition, analogous to oxide of iron, or the like. Chemical substances are characterised by constancy of composition. amidst change of shape. Organised substances are of indefinite composition and of definite form. Albuminous substances are on the debatable border-land between the two classes. They all contain a complex compound of carbon, hydrogen, nitrogen, and oxygen, with a little sulphur and phosphorus, and this is generally loosely united with various salts. In the substance called deutoxide of albumen, an extra proportion of oxygen is associated in some unknown manner with the other elements.

ON RUPTURE OF THE UTERUS,

By EWING WHITTLE, M.D., M.R.I.A.,

LECTURER ON MEDICAL JURISPRUDENCE TO THE LIVERPOOL ROYAL INFIRMARY SCHOOL OF MEDICINE,
AND CONSULTING SURGEON TO THE LIVERPOOL DISPENSARIES.

Of all the dangerous complications that may arise, during a case of parturition, there is no one fraught with more serious consequences to the patient, and more painful anxiety to the accoucheur, than rupture of the uterus. Its generally sudden occurrence in the course of a labour which has appeared to be going on satisfactorily, if slowly; the frightful rapidity with which the fatal results of the accident become manifested, and the ignorant excitement of the friends of the patient, often leading them to accuse the attendant surgeon or midwife of ignorance or negligence, altogether throw upon the medical man in attendance an amount of anxiety and responsibility which will severely test his discretion, his fortitude, and his self-possession.

The frequency of cases occurring, in which medical men are unjustly prejudiced by such accidents, makes it a matter of interest to enquire, firstly, whether there are any circumstances which may lead us to apprehend that a rupture of the uterus may take place in any given case; secondly, whether any particular line of treatment can be adopted in such a case, so as to reduce the danger of rupture to a minimum. With this view, I will now give the details of five cases which have occurred at different times in my practice, and conclude with a few practical hints derived from the experience of these cases.

Case 1.—S. W., ætat 25. This was her second confinement. She was affected with secondary syphilis severely. Had external

sores about the vulva. She was attended by a midwife, who stated that, after having tedious labour all night, the pains suddenly ceased early in the morning. She then began to sink, and never rallied. When I got to the house, she was no longer living.

Post-mortem examination. On opening the abdomen, the back of the child came at once into view, as it lay there displacing the bowels. There was a wide rent in the uterus, on its anterior surface, near the junction of the body with the cervix. Through this rent the child had passed. For two or three inches on either side of the rent the uterus was thin and soft. The edges of the rent were not more than a quarter of an inch in thickness. I believe that in this case the degeneracy and atrophy of the uterine fibre was a consequence of the syphilitic condition.

Case 2.—M. A. R., ætat 42. This was the eleventh confinement. It was a breech presentation. The os was fully dilated, and the breech rested on the brim of the pelvis. This lasted for four hours. Uterine action regular, but the pains feeble and ineffective. I then drew down the right leg, by hooking a finger in the groin. Very little force was used; but, as the knee bent down, it pressed a little against the uterus. The labour was then over in about half an hour, and she seemed tolerably comfortable; but, in about half an hour more, she became very uneasy, was restless, complained of pain in the abdomen, and sank rapidly, dying four hours and a half after delivery. There was no hæmorrhage externally, and the uterus was contracted throughout.

Post-mortem examination. There was nearly a pint of effused blood in the cavity of the peritoneum, and a tear in the uterus nearly two inches long, through the peritoneal coat, and about half way through the muscular coat, but not extending into the uterine cavity. This rupture was near the cervix, and the seat of it seemed to me to correspond with the part where the knee of the child pressed against the uterus, as it was being drawn down. The whole of the tissue of the uterus seemed morbidly soft, flabby, and pale, and appeared to be affected with fatty degeneration.

Case 3.—E. H., ætat 27. Her second confinement. She had

had a very tedious labour on the occasion of her first confinement. For several months previous to her second confinement, she suffered from cough, dyspepsia, and debility, and was altogether in bad health. I was asked to see her on a Friday evening, at 11 p.m. I found her in a state of extreme collapse; no labour pains, but a feeling of distension and extreme soreness of the belly, with great anxiety; extreme pallor, pulse very feeble, and almost too quick to be counted. I felt certain that rupture had taken place. She died in about twenty minutes. The history given by the friends and the midwife was confused and unsatisfactory. She had been ill from the Wednesday morning previous, but her pains had been feeble and irregular. She had been taken very much worse early on the Friday morning, but it was only when a further change had taken place that they thought it necessary to apply for medical assistance. On this account I could not satisfy myself as to when the rupture had taken place.

Post-mortem examination. As in Case 1, the child was found lying in the abdomen, with a great rent in front of the uterus. The substance of this organ was flabby and degenerate, but not particularly thin.

Case 4.—C. F., ætat 37. Her seventh confinement. This was a cross-birth. She had been ill all night, a midwife being with her. The water had been dribbling away for several days, but there had been no pains until this night. At 3 a.m., the midwife found an arm presenting, and then sent for a doctor. This gentleman, finding the case a difficult one, sent for another, who thought evisceration would be required. At 8 a.m., I was requested to see the patient, and render assistance. On examination, I found the right arm presenting, with the shoulder and shoulder-blade pressed down into the pelvis, the brim rather small for the size of the child, and the child pressed tightly against it, the patient not being sensible of strong pains, but the uterus being contracted on the child by a sort of tonic spasm. With some difficulty, I passed my hand up as far as the child's abdomen (the patient being fully under the influence of chloroform), but I could not reach the feet, the uterus being pressed tightly against

my hand. I made no further effort to turn, but proceeded at once to eviscerate, perforating in the axilla, through the ribs, then with the fingers breaking down the lungs, perforating the diaphragm, and through it emptying the abdomen. I then passed up my hand, expecting easily to reach the feet, but my hand at once passed through a rent in the anterior wall of the uterus into the cavity of the abdomen. This rent was transverse, and appeared to be about, or a little above, the junction of the body and cervix. The tear seemed to be the consequence of the continued pressure of the uterus on the child, there having been no manipulation to account for it. The child's abdomen and thorax being now collapsed, the head came nearer the brim, the face being the part that came within reach. I fixed the blunt hook in the orbit, but the tissues of the face, bones included, broke down so readily that with the blunt hook and fingers I was able to give exit to the contents of the cranium. The head then collapsed, a foot was easily grasped, and the delivery completed. The child had evidently been dead some days. The patient felt relieved, was easy, but the pulse was rapid and thready. She never rallied, but died at 8 p. m. the same day.

There was no *post-mortem*.

Case 5.—S. C. was delivered of her first child in 1846 by perforation. In 1848, she had a protracted labour. It was necessary to use the forceps, but the child was not born alive. The same occurred in 1849 and in 1851. Each time she made a good recovery, but none of the children were born alive. She became pregnant again in 1853, and I then advised her to have labour brought on at the seventh month. To this she consented. She had a good time, and made a rapid recovery, but the child did not live. In 1854, becoming pregnant for the sixth time, she determined to try what she could do with a midwife, and engaged one, an intelligent and experienced woman. At 8 o'clock in the evening, the midwife sent for me. She told me that the pains had been very strong for several hours, that the head had been impacted at the brim all that time, and that it had made no advance; that the pains had suddenly ceased, and that the head had receded.

I found the patient in a state of collapse, without any uterine pain, and suffering from intense pain in the epigastrium, and the head receded from the pelvis. I introduced my hand, and turned without difficulty, but was unable to complete the delivery, as the head became fixed at the brim. To get it away I was obliged to perforate behind the ear. The patient slowly rallied, and ultimately recovered, the treatment being principally the free administration of opium. It may be objected that this was not a case of rupture. As I did not feel any rent in the uterus, and as the patient recovered, a certain degree of doubt must attach to the proposition that rupture had actually taken place; still, I think, taking the symptoms into account, I am justified in drawing the conclusion that some rent had taken place in the muscular fibres of the uterus, the shock from which brought on arrest of uterine action, and collapse, and would have ended fatally if she had not been speedily delivered.

About eighteen months afterwards she had another confinement, was delivered instrumentally, and died half-an-hour after delivery.

From the first and third cases, we learn the liability to rupture, in women whose system is weakened by specific or cachectic diseases, and, consequently, the danger of allowing their labours to be too long protracted.

From the second and fourth cases, we observe the same liability in women who have borne many children, particularly if the mishap occurs of the child being in an unusual position; the primary cause of the accident being in one case the breech presentation, in the other the cross birth. With regard to the breech case, the uterus seemed so soft and degenerate that I do not believe the labour could have been safely effected, except by drawing down the feet before the waters had escaped. The opportunity of doing this had long passed before any mischief could have been anticipated. With regard to the cross birth, doubtless the woman's life might have been saved, if she had applied earlier for the assistance of a medical man.

In any case, in which rupture might be apprehended, it would be prudent to refrain from the use of ergot of rye; also, in such

cases as the fifth, when the uterus has to force the child through too narrow a pelvis. When it is considered advisable to turn, if the waters have escaped, the attempt should be made very gradually, particularly if the uterus is contracted on the child; and the patient should be fully under the influence of chloroform, so as to induce as much relaxation as possible. When, by this means, we have gently grasped one or two feet, if we find that the uterus is unequally pressed in any particular direction by the attempt to turn, it will be better to desist, and to complete the operation by the forceps or the perforator.

From the hints which I have jotted down in the review of these cases, I would suggest the following mode of practice; viz., when we are attending a patient, from whose antecedents and constitution, and from the slow and unsatisfactory progress of whose labour, we have reason to fear that we have a feeble, flabby uterus to deal with, our first care should be to soothe the patient, and keep her quiet until the os is fully relaxed; one or two small opiates will contribute to bringing this about. Then, when the os is fully dilated, rupture the membranes, and, if labour does not then proceed satisfactorily, deliver with the long forceps. In such cases as this I would particularly avoid the use of chloroform, except turning or the use of the forceps had to be resorted to.

NOTE ON THE USE OF ACID NITRATE OF MERCURY SOLUTION,

By C. E. LYSTER, M.D.,

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For some years I have been in the habit of freely using the acid nitrate of mercury, in a greatly diluted form, as a local application to secondary and tertiary syphilitic ulcerations, and have met with a degree of success which I think justifies me in briefly outlining the plan of treatment I adopt.

The remedy is pre-eminently useful in secondary ulcerations of the throat, in which class of cases I have succeeded in obtaining a cure without the employment of any specific constitutional means whatever. I have also found it very valuable in tertiary ulcerations of the tongue; and, lastly, in syphilitic sores in any part of the body, more especially when the result of rupial eruptions.

In cases of throat affection, I commence the treatment by freely mopping out the parts with the solution properly diluted, and until lately I directed the constant use of a gargle in the proportions mentioned below; but, since the introduction into practice of "pulverised fluids," I have *chiefly* applied the remedy in that form, as being not only more effectual, but less irksome to the patient.

Care is necessary in graduating the strength of the solutions used. When intended for application to the throat or tongue, either as a gargle, wash, or in the form of spray, I invariably commence with one minim to the ounce, very gradually increased to two, or even three minims. Employed in these proportions, patients have rarely complained of any annoyance. In one or

two instances, however, it has been found desirable to reduce somewhat the strength of the solution, and even to discontinue its use for a day or two. When the throat is mopped out by the practitioner, a much stronger preparation may be used (ʒi.–ʒii., ad ℥i.), and if the ulceration is deep, or of phagadænic tendency, I have occasionally employed a more powerful application (ʒiv. ad ℥i.), but this is rarely necessary. When applied to syphilitic sores on other parts of the body, I have found a lotion, composed of ½ a drachm ad ℥i., the most generally useful.

I now rarely or ever employ the acid nitrate of mercury as a caustic, either to primary sores or severe phagadænic ulcerations. When the full escharotic effect is required, I have found the strong nitric acid both more efficient and much less painful.

The following notes are abbreviated from my case book:—

J. B., admitted to Hospital January 14th, 1869. On examination, the mucous membrane of the throat was found highly congested, and of a purplish colour; great part of velum, including uvula, completely destroyed; large excavated ulcers over each tonsil. There was extreme difficulty of deglutition, together with severe and constant pain. In this case, the treatment was commenced by the application of the solution (ʒi. ad ℥i.) to the excavated ulcers, and followed up by the continuous daily use of the remedy in the form of spray (m. i. ad ℥i.) The result was marvellous, far exceeding my expectation. Relief was obtained from the first, and the patient left the Hospital on the 4th of February, with the throat perfectly healed. He could not be induced to remain longer, though I was most anxious to submit him to some constitutional treatment before permitting him to take his discharge. The sole medicine administered was opium, to allay pain at night.

R. B., a gentleman actively engaged in business, consulted me for long-existent and very troublesome ulceration of the tongue, together with nodes, and other tertiary symptoms. The local tongue affection was treated, for about a fortnight, by the constant and frequently-repeated application of the weaker solution. The result was the most marked improvement, strongly contrasting

with the slow progress made in other respects, the general symptoms yielding with difficulty to the exhibition of large doses of iodide of potassium. The patient indeed suffered acutely from nodes and nocturnal pains, for more than six weeks after the ulcers on the tongue had completely healed.

I have notes of several cases, similar in their principal features to those above recorded. I trust, however, enough has been said to induce others to try the remedy.

Employed in the manner, and in the class of cases here described, I am satisfied the practitioner will find it invaluable for the relief of the severe local symptoms, thus permitting the necessary constitutional treatment to be carried out with greater ease and efficiency.

ON NODDING CONVULSIONS,

By ALEXANDER DAVIDSON, M.B.,

ASSISTANT PHYSICIAN TO THE CHILDREN'S INFIRMARY,
AND LECTURER ON COMPARATIVE ANATOMY AT THE SCHOOL OF MEDICINE.

Ecclampsia nutans, or nodding convulsions,—or, as Sir James Clarke names it, salaam convulsions,—is one of the rarest forms of disease, only ten cases having been recorded in the medical writings of this and other countries, besides three or four others which are referred to as having been seen by Sir James Clarke, Sir C. Locock, etc., but have not been published. On account of this rarity, I think the following case of the disease deserves to be narrated, though I regret that I am unable from my observation of it to throw any further light on its pathology.

O. G. was first seen by me in February 1867, he being then nine months old. His parents were healthy, but most of their children had either died in infancy, or been still-born. This child suffered from convulsions during the first week of its life, and ever since had shown signs of mental weakness, never laughing or taking notice like other children. His expression of face was dull and heavy. His head was small and peculiarly shaped. The fontanelles were closed. In other respects he was of a tolerably healthy appearance, being full grown for his age, and well nourished. No teeth had as yet appeared.

Of late he had been suffering from peculiar convulsive paroxysms. These consisted of violent nodding of the head, and at the same time jerking of the legs upward, the whole body being for the moment thrown into a curve resembling emprosthotonos. This was repeated seven or eight times at intervals of less than half a minute, and was accompanied by convulsive twitchings of the arms. There was no loss of consciousness. The

attack appeared to give the child pain, and left him somewhat exhausted. These attacks recurred several times daily, coming on usually within two minutes after he wakened out of sleep.

Several remedies, including the bromide of potassium, were tried, without benefit. Ultimately the saccharine carbonate of iron was given in five-grain doses twice daily, and this treatment was followed by an immediate improvement in the child's state. The convulsions ceased to appear oftener than once in two or three days, and for the first time in his life the child began to smile and take notice. In April, being now one year old, he cut his first teeth; and, as dentition went on, the convulsive attacks recurred, the same in character, but more frequent and severe than before, causing him to scream violently during the fit. They were checked by lancing the gums. Soon after, he was taken to the sea-side, where he remained some weeks and improved greatly in health, and his nervous disorder took the form of slight convulsions — inward fits, with occasional slight attacks of spasm of the glottis. In June there was some return of the nodding, but only for a short time; and since that time it has never recurred. The treatment at this time consisted in the administration of cod-liver oil, and this was continued for a long time.

He was last seen by me in August 1868, after an interval of about a year. His general health during that period had been tolerably good, dentition had proceeded naturally, and he had been entirely free from the nodding convulsions. At this time he was beginning to suffer from epileptiform convulsions once a week or oftener. I have not seen him since.

This is undoubtedly an example of ecclampsia nutans, though it differs in some points from the other recorded cases. The characteristic symptom of the disease is the nodding of the head, repeated very rapidly, from 20 to 100 times, the attack coming on several times a day, usually after sleep. In this case the spasms were fewer in number, being only seven or eight during each attack, and followed one another at longer intervals; and, instead of affecting merely the upper part of the body, they extended to

the whole trunk, the pelvis and legs also being jerked forward. The most usual termination of the disease is in epilepsy.

This disease occurs in young children that are constitutionally weak from scrofula or hereditary syphilis. In the case of my patient, the family history indicates the probable existence of constitutional syphilis. As to the morbid anatomy nothing is known. Mr. Newnham, who has recorded four cases, thinks that there is strumous inflammation of the membranes of the medulla oblongata. It appears to me that the occurrence of the paroxysms immediately after wakening out of sleep shows that the exciting cause has some relation to the cerebral circulation. Probably disturbance, originating in the brain, is transmitted to the spinal chord, and gives rise to those tetanic-like convulsions.

The treatment which appears to have been most useful in these cases is the administration of iron and cod-liver oil, and the removal of any source of irritation in the gums or the intestinal canal.

REMARKS ON THE IMMEDIATE TREATMENT OF STRICTURE OF THE URETHRA,

By REGINALD HARRISON, F. R. C. S.,

ASSISTANT SURGEON TO THE ROYAL INFIRMARY, AND LECTURER ON ANATOMY AT THE SCHOOL OF MEDICINE.

Undoubtedly one of the greatest improvements that have been made in the treatment of stricture of the urethra is that associated with the name of Mr. Holt, and which is not inaptly denominated by him as "immediate."

Comment on the operation may seem almost superfluous, but, as some still hesitate to perform it, the experience of individuals who have given the plan a fair and impartial trial may, in some measure, tend to remove any prejudices which may stand in the way of its more universal adoption.

Of the various methods of treatment that have been practised, as far as my own experience and observation go, I have no hesitation in stating that the immediate plan places the patient suffering from organic stricture in the best position, both immediately and prospectively; that is to say, whilst the canal is dilated to a sufficient extent, the obstruction is so acted upon, that, with a minimum amount of care and attention on the part of the patient, he is secured from subsequent inconvenience. Not only is the canal stretched, but the material constituting the obstruction is deprived of, in a very great measure, or, more correctly speaking, prevented exercising, its contractile power upon the urethra.

To take an example; early in 1863 a gentleman placed himself under my care for stricture of some standing. He had been twice treated by gradual dilatation, and on each occasion, as far as immediate results were concerned, with success. He had learned to pass a bougie with a dexterity which might be envied; he never

neglected himself, and yet, in the course of a few months, sometimes weeks, he was obliged to seek relief from the surgeon. During the years 1863 and 1864 he was twice or thrice under my care, with similar results. I suggested other means, but without avail, until an absence from England for some period was impending, when he submitted to the immediate plan. He went abroad shortly afterwards, and has never had occasion to seek further surgical advice. I have twice, since his return, seen and examined him with a bougie, but, beyond feeling a slight roughness about the membranous portion of the urethra, have failed to detect any obstruction. I take this as affording a fair comparison between two methods, very much in favour of the immediate treatment. The instance I have taken is in no way exceptional. I have several patients, upon whom I have operated some years back, under observation, with equally satisfactory results.

In two cases recently operated on, perinæal fistulæ were present. One occurred in my practice at the Northern Hospital, during the time I was honorary surgeon there. The patient, aged 45, had suffered from stricture for five years, the result of an injury to the perinœum. This was followed by extravasation of urine, requiring free incision, and leaving a fistula, through which a considerable quantity of urine continued to escape. The patient's health was rapidly breaking down under the continual irritation. Very considerable difficulty at first was experienced in introducing the smallest size bougie; in the course of a fortnight I was enabled to get in the dilator and split the stricture. The fistula rapidly healed up, the patient's general health was re-established, and he left the hospital quite well, No. 12 bougie passing readily. Here we have a stricture resulting from rupture of the urethra, a form of obstruction least amenable to treatment, and which was rapidly undermining the constitution of the patient. The almost sudden restoration of the urethra to its natural calibre afforded a free vent for the urine, and permitted the closure of the fistula without any further local treatment.

Another case, complicated with fistula, occurred in my private practice, in the person of a delicate-looking young gentleman, who had suffered from stricture for nearly three years, coming on after

gonorrhœa. Twelve months before I saw him an abscess formed, which resulted in a fistulous communication behind the scrotum. Though from his appearance and general condition I was induced to hesitate somewhat before resorting to the immediate plan, I was surprised to find the rapidity with which he was completely restored.

When false passages exist, the advantages offered by the immediate plan are considerable. Some trouble is often experienced here in introducing the dilator, as would be the case with any other instrument, but, with a little patience, this is overcome. The withdrawal of the stilette, and the escape of urine through the canala, show that the instrument has reached the bladder, whilst the finger in the rectum indicates whether or not it has passed there in a legitimate manner.

The little hæmorrhage that attends the splitting is remarkable. This, however, is explained by the observation that has been made by "surgeons who have had the opportunity of examining the urethras of patients upon whom they had operated shortly before, and they found that the mucous membrane was entire, and that merely the indurated submucous tissue, or stricture proper, was torn. This may not of course be the case in every instance; but it is certain that in many Holt's dilator does not tear the mucous membrane, and hence the very slight symptoms produced" (Heath, *British Medical Journal*, No. 446).

The same condition of the parts observed after the operation explains why we have no reason for fearing extravasation or infiltration of urine into the tissues surrounding the urethra; such an accident has never occurred in my own practice, nor have I ever observed it in cases treated by other surgeons.

The pain caused by the operation is of so short duration, and frequently of so trifling a character, that it is hardly worth while placing the patient under the influence of chloroform; there is no objection to it as far as I am aware, and, in the case of highly nervous and sensitive individuals, its use is a decided advantage. Where we have false passages to contend with, it is, I think, better that the patient should not be anasthæsiated, as the introduction of the instrument in some of these cases is rather favoured

by the expressions of the patient. "There's a wrong road just about there," is not an uncommon remark with a patient, when the end of an instrument temporarily impinges upon the entrance of a false passage.

The immediate relief that is afforded is worthy of notice; I allude more especially to those sensations experienced by patients which commonly follow the introduction of bougies in cases of very tight strictures. This has been very aptly commented on in a recent number of the *Medical Times and Gazette*. "The nature of the relief afforded is not unlike that which follows the splitting or dividing of an irritable ulcer or fissure in the rectum. The division releases tension, and, so far from increasing irritation, gives relief" (Professor Fayrer of Calcutta, *Medical Times and Gazette*, No. 995). This explains why rigors immediately following the operation are comparatively rarely met with.

The extreme rapidity with which bad cases can be conducted to a favourable issue is also a characteristic feature of this method. The last case I treated at the Infirmary affords a good illustration, and I will briefly narrate it.

J. M'F., a labourer, aged 36, was admitted into No. 7 ward, on August 17th, 1869, with great difficulty in passing his water. It appears that he had suffered from stricture for six years, following an attack of gonorrhœa. On one or two occasions he has suffered from complete retention, and now only passes his urine in drops. On admission I succeeded in introducing the finest bougie through two strictures of no ordinary tenacity; by the 30th of the month I had with some difficulty advanced to a No. 4, and, on the following day, I put in the dilator, and split the strictures, drawing the urine off with a No. 12 catheter. A few drops of blood escaped, and but little pain was experienced. Rest in bed was enjoined, as a precautionary method, for twenty-four hours. On the second day a No. 12 bougie was passed readily into the bladder. The patient was now made an out-patient, coming to the Infirmary from time to time, in increasing intervals, to have the bougie introduced, until he could be entrusted with the charge of his own case. Here we have fairly instanced the more immediate advantages of the method employed, a fortnight serving to place the patient in a

position that he had not enjoyed for years, in spite of an obstruction of certainly not an ordinary character.

One precaution should not be omitted, namely, to examine the urine, before proceeding to operate; evidence may very possibly be afforded so as to render even the adoption of this so comparatively slight an operation undesirable.

Speaking generally, I have observed the greatest benefit follow the operation where the dilator, or a No. 5 bougie, passed into the urethra was held with tolerable tightness. Here, on smartly introducing the dilating rod, a sensation is at once experienced, almost like the snapping of an india-rubber band, indicating the complete rupture of the stricture. In these cases we may anticipate the most favourable results.

In the earlier forms of stricture that come under our notice, I prefer, as a rule, adopting the principle of gradual dilatation; in these cases the effusion, being soft and yielding, is readily acted on by the pressure of the bougie, and may be completely removed by absorption. Should, however, early treatment be neglected, and the constriction obtain contractile power, like an ordinary cicatrix, little can be hoped for by dilatation only.

In conclusion I would remark, that sufferers from organic stricture owe no slight debt of gratitude to Mr. Holt, for the very safe and successful plan of treatment he has placed in the hands of the profession.

POISONOUS DYES,

By J. C. BROWN, B. Sc., F. C. S.,

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Since the year 1856, the eyes of the world have been dazzled by a variety of new colours, of every hue and shade, and of unwonted brilliancy, produced chiefly from aniline and other products of distillation of coal tar. In every branch of decorative art these colours have become common, and they are especially used in dyeing articles of dress. During the past year some of the favourite dyes have attracted the attention of the medical profession, by producing irritation, and other symptoms of poisoning, when coloured articles of clothing are worn next the skin.

The brilliant magenta dye, rose-aniline, is produced by oxidation from aniline through the action of arsenic acid, which is reduced to arsenious acid in the process. Mr. Wanklyn first pointed out the fact that some of the arsenic remained with the dye as an impurity, and might produce poisonous effects if the dye were used incautiously for colouring clothing, toys, or confectionery. I am not aware, however, that any bad effects have hitherto arisen from this cause.

The colour which is at present notorious for producing local exanthema, and sometimes even more serious general disorder, is coralline. It is a bright red colour, resembling the old Turkey red, and is used for dyeing silken and woollen goods. Coralline is composed of two substances, a magenta basic dye, and a yellow alcoholic dye, called Naphthaline yellow.

Professor Tardieu of Paris (*Comptes Rendus*, July 5th, 1869), attributes the poisonous action to the dye itself, while M. Landrin

(*Comptes Rendus*, June 28th, 1869,) denies that the pure colour is a poison, and attributes the poisonous effects to metallic impurity.

I received from Mr. R. Harrison, F. R. C. S., a pair of red silk socks, which he had observed to produce an eruption on the feet of the wearer. One of these I submitted to a minute examination for arsenic, both by Reinsch's test, and by a modification of Marsh's method, and found that it did not contain the least trace of arsenic. I also dyed ribbons with magenta produced by the arsenic acid process, and with pure aurine (*rosolic acid*), which was kindly supplied by the manufacturers, Messrs. C. Lowe & Co., of Manchester, and with other coal tar dyes. These ribbons I tied round my arm, and wore continually for twelve days, with a negative result in all cases.

I conclude, therefore, that the poisonous property belongs to the coralline dye alone.

Coralline may be recognised by the following properties:

1. Like most of the new dyes, it is removed by boiling alcohol; the fabric, however, retaining a light salmon tint.

2. It is brightened rather than dimmed by ammonia.

3. The fabric dyed with it becomes yellowish-grey when treated with hydrochloric acid; the colour is restored by caustic potash or ammonia.

4. When a weak solution is examined by the spectroscope with transmitted white light, it absorbs all the rays from the middle of the green to the violet.

5. The colour is substantive to silk, but cannot be fixed on cotton without a mordant.

CARBOLIC ACID IN SURGERY,

By ROBERT HAMILTON, F. R. C. S.,

SURGEON TO THE SOUTHERN HOSPITAL.

If the testimony of all those who have given an extended trial to carbolic acid in the dressing of surgical lesions could now be collected, it would be a valuable help to an impartial observer in coming to a decision as to its merits. It has found many supporters, and in the majority of metropolitan and provincial hospitals it has its advocates.

In certain cases, when properly used, its efficacy is undeniable, and this has led to its having been tried in almost every form of solution of continuity of skin. It has failed to shew in many of them any advantage over other modes of treatment,—who could expect otherwise of any one surgical appliance?—and thus numerous illustrations have been given to its detractors, to strengthen their assertion that it professes no superiority in any case over older methods.

If another argument was needed to prove the desirability of a further report upon carbolic acid, after the many which have already appeared in the different periodicals, it might be found in the onslaught made upon it by Mr. Nunneley, in his address on Surgery, at the late meeting of the British Medical Association, at Leeds. This certainly has made it imperative upon all those who have had considerable experience in the use of it to come forward with facts and figures, and publish their conclusions.

If a goodly array of successful cases resulting from its use can be set forth, though it might not have much weight with Mr. Nunneley, yet it would, in the minds of most men, be the best answer to an attack based mainly upon theoretical grounds.

In the present paper, I propose to give the results of the adoption of carbolic acid, as a dressing in surgical lesions, at the

Southern Hospital, during the eighteen months, terminating in June last, namely, from the 1st of January, 1868, to the 30th of June, 1869, inclusive.

I also append a few particulars concerning the use of the same agent at the Royal Infirmary and the Northern Hospital, with which I have been favoured through the courtesy of the surgical staff of those institutions.

The cases in which the carbolic acid treatment was adopted at the Southern Hospital during the period named comprised—

Compound Fractures of all kinds,	61
Large Abscesses,	13
Lacerated Wounds,	28
Scalp Wounds,	12
Incised and Punctured Wounds	18
Resections (one of the Ankle-joint, the other of the Wrist),	2
Amputations (five of the larger Limbs, ten of Fingers and Toes,)	15

The Compound Fractures consisted of

The Tibia and Fibula,	10
The Skull,	9
The Arm and Fore-arm,	7
The Wrist and Hand,	5
The Thumb and Fingers,	10
The Nose,	3
The Foot and Metatarsal Bones,	5
The Toes,	12

The Lacerated Wounds include those of

The Axilla and Chest,	2
The Knee,	2
The Cheek and Forehead,	9
The Arm, Wrist, and Hand,	6
The Nates,	1
The Thigh and Foot,	6

The Incised and Punctured Wounds include those

Of the Thigh and Leg, - - - -	4
Stabs of Abdomen, Chest, and Back, - -	4
Throat (Suicidal), - - -	3
Elbow, - - - - -	1
Knee Joint - - - - -	1
Arm, Hand, and Wrist, - -	3
Forehead, - - - - -	2

It would be tedious to the reader, even if space allowed it, to give in detail a precise account of each injury in the above list; it must suffice to say, that each one was of its kind severe, sufficiently so to render it necessary to take the patient into the hospital, and not treat him as an out-patient. The number of beds at the Southern Hospital is not at all in proportion to the demands made upon them, and therefore the admission of accidents into the wards has to be strictly limited to severe cases.

Now, taking the dates of admission and discharge of each patient as guides to the length of time occupied in effecting a cure, a reference to the In-Patient book shews that of the above, 20 were discharged cured, at or before the end of the first week, and these consisted of 14 lacerated wounds, including those of the wrist, cheek, and forehead,—2 abscesses (arm and leg),—and 4 incised wounds (abdomen and arm).

At or before the end of the second week, 33 were discharged cured, and consisted of 18 incised wounds (throat, elbow, knee-joint, leg and back); 10 compound fractures (skull, nose, thumb, fingers, and metatarsus); 1 abscess, and 4 lacerated wounds. Seventeen were discharged at the end of the third week, of which 4 were compound fractures (thumb, great toe, and fingers); 4 were punctured wounds; 2 were abscesses of large size; 7 were small amputations. Twenty-eight were discharged at the end of a month, and included 10 fractures (humerus, fingers, nose, great toe); 1 large abscess, and 15 severe lacerations (the axilla, the nates, thigh, knee); 2 amputations (the arm). Thirty-six were discharged between six weeks and two months after admission, and

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these cases consisted mainly of large compound fractures (the tibia and fibula, the arm and fore-arm, the wrist and hand, the foot); three amputations of the leg, and 4 extensive lacerations (two of the arm and thigh, and two opening the knee-joint).

Fifteen cases remain to be noticed, four of these died. One a compound fracture of the skull, where the treatment had little to do with the result, as an autopsy revealed the fracture extending to the base, inflammation of the membranes, and pus coating the same. Death occurred ten days after admission.

Another was an old man with compound fracture of the hand, with a good deal of laceration of soft parts, caused by the hand being caught in a cog-wheel. Amputation three weeks after admission, death two weeks after amputation, from exhaustion. He only partially rallied from the shock of the accident; the injured limb never took on healthy action. Large abscess formed in the axilla.

The third death was that of a lad of 17, admitted with an abscess over the right deltoid muscle, extending upwards and backwards to the shoulder. The whole arm was greatly swollen, and there was much suppurative fever. He had received a severe blow from a heavy piece of timber upon the arm a few days before, and attributed the abscess to that. The latter was evacuated the day after his admission, with all the precautions recommended by Mr. Lister, under a curtain of carbolic oiled lint, with a lancet moist with carbolic oil, the surrounding skin oiled with the same, and an opening of large size being made to ensure rapid and complete evacuation. About twenty ounces of pus escaped. The next morning the dressings had to be renewed, so much offensive pus had streamed out from under the bandages, and from this time they had to be replaced with clean ones twice a-day. On the third day a rigor, and symptoms of pyœmia appeared, of which he died twelve days after admission, both knee-joints, wrists, and ankles being filled with pus. Whether it was a case of pyœmia when admitted, or whether the pyœmia was a result of hospitalism, cannot be determined. There had been no pyœmia for months in the wards. The suddenness with which it manifested itself also seems to render the latter supposition improbable. On the other

hand, it is quite probable that all our efforts were insufficient to prevent the entrance of septic germs into the wound; and though he was surrounded with an atmosphere of carbolic acid, and had the wound washed each time with carbolic lotion, dressed with carbolic oil, with a further covering of carbolic putty, yet the pus which streamed out swamped them all in its offensiveness.

I regretted afterwards that a stronger solution of carbolic acid had not been used. That employed, being one of acid to ten of oil.

The fourth death was that of a young man suffering under phthisis, in whom a lumbar abscess appeared. This, when it had attained a large size, and had begun to point, was evacuated in the manner previously mentioned, and apparently with complete success. There was no further appearance of pus for ten days, and the incision seemed healed, when a slight discharge of thin pus set in, and continued for three weeks, before it finally ceased. The phthisical symptoms rapidly progressed, and he died four months afterwards.

The remaining eleven cases are made up of the following. Two boys admitted within a few days of each other with precisely similar injuries, a compound fracture of the left parietal bone, extending across the bone horizontally, three inches in length, the lower fragment depressed an eighth of an inch along the whole line of fracture; the scalp wound was also extensive, a large flap being thrown back. In neither case was any attempt made to elevate the depressed portion, no symptoms of compression being present. The flaps were washed with carbolic lotion, dressed with carbolic oil, a dressing which was not removed till after the third day, when very little suppuration was found to have set in. The dressings were then daily renewed, and at the end of four weeks both wounds were healed, the amount of pus secreted throughout in both being surprisingly little.

The third case, an old man of 70, with compound fracture of tibia; the recovery was tedious—constitutional causes seem to have retarded it. The wound was small, but the powers of life were feeble. He had three attacks of erysipelas in the limb. He was four months in the hospital.

Fourth case, another compound fracture of the tibia in a lad of 15,

who was ten weeks an in-patient. There was here a large wound of the calf of the same leg, not communicating with the fracture. Both wounds dressed with the carbolic oil, but it was the loss of tissue in the calf which rendered this case tedious.

Fifth case, a young man of 18, received a penetrating wound on the outer side of the right patella, the wound was two inches long, and the joint opened into. He did not apply at the hospital till three days after the accident, when intense inflammation of the joint had supervened. The leg was bent at an obtuse angle, the whole limb very much inflamed, and swollen, and the constitutional disturbance great. The pain on the slightest movement was intense. It was necessary to give him chloroform before proceeding to fix and dress the limb. Under chloroform, the leg was gradually straightened, the wound sponged with the carbolic lotion, and then the carbolic oil on lint, paste and tow applied. The whole limb, resting on an inclined plane, was swung from a cradle. The dressing was not changed for two days, the constitutional symptoms gradually subsided. On alternate days, the lint was changed. There was very little suppuration, and the wound slowly healed. There was some stiffness of the joint when he left the hospital at the end of six weeks, but the entire freedom of motion of the joint has now been recovered.

Sixth case, a boy of 14, was admitted, whose hand, having become entangled in machinery, was nearly torn off. On examination, a wound extended across the wrist, consisting of a semi-circular flap, which, on being raised, and the finger introduced under it, the latter entered at once into the joint; the carpal bones were nearly all loose, and displaced; all the palmar tendons were cut through; in fact, amputation had been almost effected, yet neither arteries were divided. Having determined to try and save the hand, I had the wound dressed in accordance with Lister's plan. Bandaging the limb to a straight splint, with the fingers and thumb bent over the one end of it. In the progress of the case there were no untoward symptoms; dressed on alternate days, suppuration was very slight; there was scarcely any swelling of the arm or fore-arm. He was allowed to get up on the third day, carrying the arm fixed to the splint in a sling. When the whole was healed, which was

a month after the accident, great thickening of the joint, with stiffness, remained. Subsequently, through a sinus, small portions of dead and loose bone had to be removed, but the boy has now quite recovered, with a good hand.

The seventh case, a lacerated wound of forehead on the left side, four inches long, extending from the edge of the hair half-way down the cheek. It might be more properly called a compound fracture of frontal and malar bones, both bones being broken, and a portion of the latter loose. He had been struck by a winch handle. The edges of the wound, after being cleaned, were brought together with sutures, and the carbolic acid dressing applied. The wound entirely healed by first intention, without the slightest suppuration.

The eighth case, compound fracture of the leg, in a woman of 60, with great displacement of the bone; two inches of the tibia had to be sawn off. The difficulty afterwards in keeping the limb in position was great, owing to the restlessness of the patient. From the same cause, erysipelas, and a succession of abscesses in the leg and thigh, followed, and though the bones have united, she is still an in-patient, four months after the accident.

The ninth case, frost bite of both feet in a negro, rendering amputation of the ten toes and two smaller metatarsal bones necessary, without sufficient skin being found to cover the stumps. Did well with the after dressing of carbolic acid. Three weeks under treatment.

Tenth and eleventh cases, two abscesses, one on the back, the other on the leg. The first, a young man of 20, admitted with a swelling under the right shoulder blade, which slowly increased; and an immense abscess formed, covering the whole scapula. When ready for lancing, it was opened on Lister's plan, and 32 ounces of thin pus let out; the sides of the sac were well pressed, and efforts made to completely empty the cavity. It was then dressed with the carbolic oil, and tightly bandaged. He was made to lie on his back—he had previously been unable to do so, from the size and pain of the abscess. The next day the dressings were not disturbed, as no pus had escaped below the bandage. It was not till the end of a week that the coverings were removed. No

pus was found upon them, the lint was dry, granulations filled up the incision, and the walls of the sac had collapsed and united. This was the most successful case of abscess evacuated on Lister's plan that has come under my notice.

The abscess in the leg, remaining to be mentioned, was not quite so rapid in its healing after evacuation. The man's leg had been crushed ten days before admission, and this had led to the formation of the abscess. When opened, about twenty ounces of pus were let out. On the third day the dressings had to be removed, so much matter had oozed down under the bandages, which smelt offensively. In the fresh dressings, a stronger solution of carbolic acid, 1 to 5, was made use of, and no further accumulation of pus in the sac took place; the lint was changed twice a day. It was a fortnight before the wound was quite healed.

In the cases above related, the method of applying the carbolic acid has not been described in detail; a few words upon the plan pursued are therefore necessary. Professor Lister maintains that carbolic acid dressings can only be successful, to the extent they have been in his hands, by a strict regard to the carrying out of the principle upon which he uses it, namely, that there are minute living organisms ever present in the atmosphere, which, when they come in contact with a wound, are the sole cause of the excess of suppuration, and of decomposition which so often ensues; and that these living organisms can be at once either neutralised, or destroyed, by carbolic acid. It is only necessary, therefore, to exclude atmospheric air from a wound to procure its rapid healing, and as this is impossible to do completely, then by using carbolic acid we can neutralise the germs, which through the medium of the air come in contact with the raw surface, and so attain the same end—a more speedy recovery.

With this thought guiding us, the above cases were treated, and though the minor ones may not have had such persistent efforts made in their after dressings to exclude the air, and organic germs,—in hospital practice this is almost impossible,—yet in all the more severe ones a rigid attention to the principle involved was adhered to. In the compound fractures, incised wounds, large

lacerations, and amputations, the washing of the wound or cut surfaces with clean tow, soaked in carbolic lotion of the strength of 1 of the acid to 40 of water, was the first step; the next was the carefully applying a triple fold of lint soaked in carbolic oil, the strength of which was 1 of acid to 10 of rape oil; over this, a large pledget of tow or cotton wool was laid, and then the whole bandaged. In many cases of compound fracture, and of stabs or cuts, when dressed within half-an-hour of the accident, and where the wound was not gaping, the washing with the carbolic lotion was omitted, and in many the edges were brought together with sutures, before applying the lint. In a few instances, Mr. Lister's antiseptic lac plaster was used, but as I failed to find any advantage in it over the carbolic putty, I generally preferred applying the latter over the lint, after the evacuation of abscesses, and in their subsequent dressings; also after amputations, resections, and the more severe wounds of joints. The carbolised putty being composed of carbolic oil, 1 to 5, mixed with sufficient chalk to make a soft putty; the latter being spread on tin foil before applying it.

The time which elapsed before the first dressing was removed was made to depend upon the general appearances in the neighbourhood of the injured part, as far as they could be made out without disturbing the coverings, and upon the general symptoms. If no increased pain or uneasiness, if no inflammation or swelling was visible in sound parts above or below the wound, and if no unhealthy discharge or smell was apparent, then the third day was allowed to elapse before the coverings were removed, and a repetition of similar dressings applied. With perhaps eight exceptions, where the first dressings were allowed to remain a week, the end of the third day was the usual time at which the second dressing was put on. The frequency of succeeding dressings depended entirely upon the amount of pus which bathed the wound; the greater the amount, the more frequent the fresh dressing. In about one-half, it took place on alternate days; in the majority of the remaining half, daily; whilst in a few, the dressings were changed night and morning.

I come now to the latest development of the antiseptic system,

the carbolised catgut ligature of arteries. In this a great advance in surgery has been made. The brilliant results obtained by Mr. Bickersteth, at the Royal Infirmary, in his two aneurisms*; so soon after Lister had published his experiments with the compound catgut ligature†, was a happy omen of the success likely to follow this new method of securing arteries. Any one who has read Mr. Lister's paper must be strongly impressed with the force and weight of his arguments, and, if so, will not be unwilling to try his plan when occasion offers. We have at the present time three rival methods of arresting hæmorrhage, Sir J. Y. Simpson's acupressure, Mr. Lister's catgut ligature, and torsion, each of them devoid of many of the drawbacks which beset the old plan. Acupressure has now been before the profession for some time, and I think I am not wrong in saying that, though from the eminence of its originator it has been extensively tried, yet only a very few surgeons have permanently adopted it, in lieu of the old ligature; my own trials of it did not encourage me to persevere with it. The introduction of a number of needles in the flaps of an amputation, even though they remain but a few hours, has several objections; among them is the mischief done to the soft parts by the amount of pressure put upon them by so many needles at a time, when their vitality is at a very low ebb. A feeling of uncertainty attends the mere use of torsion, which will probably prevent its general adoption, except for small arteries. Professor Lister's plan being free from these objections makes me anticipate that the advantages aimed at in acupressure will be obtained with more certainty and security in the catgut ligature. One result is sure to follow, if even catgut and carbolic acid fail, operators will no longer hesitate to cut off short both ends of the ligature, and thus, reversing the proverb, risk the ills they know not, rather than bear those they have too well known.

The cases in which I have had an opportunity of applying the compound catgut ligatures were two amputations of the leg, in which I tied the anterior and posterior tibial arteries, cutting off both ends of the ligatures short, with very satisfactory results, so

* Published in the *Lancet*, May 29th, and June 12th, 1869.

† Vide *Lancet*, April 3rd, 1869.

far as fixity of tenure was concerned. Beyond that I cannot speak, as in both cases, from the previous unhealthy condition of the patients, and other causes, much of both flaps sloughed, and though we had no further trouble with the arteries, yet portions of both tibiæ and fibulæ had to be removed subsequently; and whether the ligatures remained, and became organised, or separated and passed away in the discharges, could not be made out. The catgut was the thickness of ordinary crochet cotton, and was saturated for some hours previous to using it in carbolic lotion, 1 part to 10. That there are difficulties connected with the use of the catgut must be admitted. In employing it for sutures, I have more than once found the following to occur; the catgut itself has broken, under the continued strain of holding two parts together; not that the knot has untied, though this happened once to me, but the part of catgut hidden from view has yielded, some hours after being applied. However, these two difficulties are probably capable of being overcome, by using catgut of sufficient thickness, and by immersing it in a carbolised fluid, to increase its tenacity, such as a solution of glue or gum, to which has been added some carbolic acid.

The CONCLUSIONS at which I have arrived from observation of the 150 cases related, are these,—that in a few compound fractures and stabs I have seen results follow the plan of hermetically sealing the wound with lint, soaked in collodion or in the fresh blood, equal to the best observed under the carbolic acid treatment; and as the good effect of sealing up the wound with either of the former is due to the successful exclusion of the air, it strengthens the position of the advocates of carbolic acid, who use the latter with the same end in view; but as collodion and fresh blood are of such limited application, being only available where the external opening is comparatively small, the wound clean, and the time which has elapsed from receipt of injury short, the carbolic acid is of general application, and therefore more useful. It was in the compound fractures, in wounds opening the knee joint, in compound dislocations, and in stabs of great depth, that the striking effects of the carbolic acid dressings were best observed. Their

superiority to water dressings and poultices in other cases, such as large lacerations, consisted in their greater cleanliness, absence of smell, diminution of discharge, and increased comfort to the patient, and not in the rapidity of healing. It is not the depth, but the superficial extent, of skin to be made good which determines the length of time required to heal a lesion; and as the difficulty of applying the antiseptic system increases in proportion to the extent of surface to be made good, and becomes almost impossible where the loss of skin is great, so the fact of the length of time in healing varying so little, in such cases, under the old and new systems, does not invalidate the antiseptic principle because it is really due to the imperfection of our plans for bringing it to act in all its integrity in these instances.

A few words now upon the antiseptic system as explained by Mr. Lister. He bases his theory upon the existence of organic germs in the air, but I do not see why there may not be infinite variety in the nature of the particles floating in the atmosphere, many of them not being organic, that is, not derived from either the animal or vegetable kingdoms, which yet exercise an injurious effect on a suppurating surface, quite as readily as the living organisms of Lister. I don't deny the existence of the living organisms, because I believe they are often present, and that some forms of them are the active agents in producing pyœmia, traumatic tetanus, and erysipelas; but in the ordinary run of cases, where a wound or discharging surface seems long in healing, if the cause is not purely a constitutional one, then it may be that the atmosphere is contaminated with some element from the inorganic kingdom, which is interfering with nature's processes in the sore. Both 'influences,' for one can only speak of these unknown particles from the organic and inorganic kingdoms in most indefinite language, must vary in their effects. There may be organic germs too minute for microscopic eye to discern, which, fastening on a wound, retard but do not suspend its healthy progress; there may be others of more potent influence, which produce greater mischief, and check the curative process for a time; and there may be still more baneful ones, whose contact and absorption is the setting up of disease, resulting even in death. And again, there may be

inorganic particles belonging to the mineral kingdom, which, lighting upon a wound, stop its healthy progress, or even develop mischief in various forms.

It is this variety in the atmospheric forces at work which makes me hesitate to accept carbolic acid as an antidote for them all. It may be the best as yet known, and may be potent with many a germ and particle, in neutralising their power for evil; but it is taking too limited a view of the other forces evolved in nature, and probably to be obtained therefrom, to assume that the immensity of invisible life, which is unceasingly bursting into activity around us, is not opposed by as great a variety of agents from the mineral and gaseous kingdoms, as there are forms of life to be destroyed. Many a drug we now use may owe its effectiveness to an antiseptic property not hitherto understood. And such is probably the explanation of the action of iodine, sulphur, creosote, and a host of others.

All this may be said to be supposition and guesswork, clothed in language too undefined to be of much value; but such is scarcely the fact. In a region where a certain amount of solid ground has been found to work upon, one advances cautiously, unable to stand still and abstain from speculating altogether upon the unknown land, seemingly so near, and yet may be so far off. I say seemingly so near, because the facts daily observed in hospital routine accumulate as the years go on, and the new light from other sources thrown upon them establishes them the more firmly in our minds, and we feel we are getting nearer and nearer the truth. Who can have watched for years, in public and private practice, a succession of wounds and lesions of varying degrees, without having become convinced that surrounding atmospheric influences greatly determine their course. Let but this point be conceded, and I think it is by all those of large experience, and what an advance it is. The insight from that stand-point we are striving to obtain, is into the kingdom of the atmosphere, if I may so express it; and though Professor Bennett says, "atmospheric dust from crowded assemblies, from the summit of the highest building, from empty cathedrals, and from ancient vaults has been ransacked in vain to discover organic germs," yet it has not been wholly in

vain, the evidence is not all negative; and there are facts, established through the researches of M. Pasteur, which all the labours of M.M. Pouchet, Musset and Jolly fail to controvert; and we wait with longing impatience for the reports of the hosts of savants who are now carrying on independent investigations into the varying contents of the atmosphere, before we dismiss the germ theory, which fits in with so many observed facts, and helps to explain so much of what was before unintelligible and obscure.

At the Royal Infirmary, the carbolic acid has been employed by Mr. Bickersteth since its first introduction. All his cases are treated by it, he continues a warm advocate of it, and I need only refer to his two papers in the *Lancet*, on the antiseptic treatment of wounds, to prove how thoroughly he adopts the antiseptic system of Professor Lister. The precautions he took in the two cases of aneurism there described,—in which he tied the common carotid and external iliac arteries with catgut ligatures, to prevent the entrance of septic germs, and to promote the rapid healing of the wound under the use of the carbolic acid,—shew his continued faith in the system. These two cases were the first in which the carbolised catgut ligature was successfully applied to the human subject.

After amptutations, in the dressing of stumps of compound fractures, and of all wounds, the carbolic acid lotion and the carbolic oil are used. The composition of the C. A. lotion is carb. acid and methylated spirit, of each ʒii, water oi. being 1 in 40. The C. oil is 1 part of acid to 12 of linseed oil. Mr. Bickersteth also frequently uses the antiseptic lac in his more severe cases. His plan is to cut a piece of lac plaster of the required size, dip it in water, which causes the lac to separate from the calico on which it is spread, and the lac, if found perfectly impervious, is then put over the C. O. lint covering the wound, and made to adapt accurately to the part.

At the Northern Hospital, the carbolic acid has not been very extensively tried, but so far as it has been used the surgeons speak favourably of it. Two cases of amputation of the arm, under Mr.

Lowndes' care, were dressed from the first with carbolic oil, and at the time I saw them, between three and four weeks after, had almost completely united. The mode of dressing adopted by Mr. Lowndes was, after the operation, to put a piece of dry lint over the flaps, and over this three layers of lint soaked in carbolic oil, of the strength of 1 to 40; above these, gutta-percha tissue; and lastly, bandaging. These dressings, with the exception of the dry lint next the flaps, were renewed every other day. The dry lint was not removed for a week.

Two cases of compound fracture of the leg, under Mr. Manifold, had, upon admission, the wounds dressed in accordance with Mr. Lister's plan, and no suppuration occurred, the wounds healing rapidly. These are the only instances in which the carbolic acid had, at the time of my inquiries, been employed at the Northern Hospital.

ON SOME PECULIAR RESULTS OF INJURY TO DIGITAL NERVES,

By W. M. BANKS.

The amount of suffering which results from injury to the trunks of nerves is sometimes apparently out of all proportion to the severity of the original lesion. Throughout the Medical Journals, for the last twenty or thirty years, are scattered numerous isolated cases of general tetanus, convulsions, local spasms, violent neuralgias and anomalous affections of every description arising from injuries of such a trivial nature as a slight cut or a mere prick. The following cases are examples of great pain and suffering consequent upon very trifling injuries to digital nerves, which were relieved in each case by the excision of a portion of the affected nerve. I assisted Mr. Bickersteth (in whose practice they occurred, and who has kindly allowed me to publish them) at the operations, and took the following notes of the cases during their progress.

On October 30th, 1867, a young married lady consulted Mr. Bickersteth, complaining of great pain in the fore finger of the left hand. About a fortnight previously she had given herself a pretty severe cut with a bread knife. The wound had healed well, and its cicatrix was still quite soft. It was a little in front of the metacarpo-phalangeal flexure of the finger, and was partly on the palmar and partly on the outer aspect of the digit. It was a slanting cut, and its deepest part was just over the outer digital artery and nerve of the fore finger. Although the wound had healed well, the patient had suffered intense pain in the finger, so severe as even to deprive her of sleep; indeed she had not had any rest at night for a fortnight. The finger was somewhat swollen and stiff, and had a peculiar glazed look about it, which

pointed to some injury of the nerve. It was therefore resolved to lay bare the digital nerve at the site of injury, and remove a portion of it. The soft cicatrix was broken up with a probe, and a small linear incision was made nearly at right angles to it, over the position of the nerves. With some little dissection the nerve was reached, and a portion of it—along with some little adherent pieces of fatty tissue—removed. The accompanying artery was cut, but soon ceased bleeding on the application of cold. The little flaps were then nicely adjusted with sticking plaster, and dry lint put on. On examining the pieces which had been removed, two of them were found to contain portions of the nerve, one about $\frac{1}{5}$ of an inch long, the other much smaller. Nothing could be detected wrong with them after a most careful examination, both by the naked eye and with the microscope.

The patient returned on November 2nd, three days after the operation. The wound was healing rapidly, the edges having united at once. *She had suffered no pain whatever*, and had slept well at night. Sensation was lost along the greater part of the outer side of the finger.

On November 8th, the wound was quite healed; the patient had suffered no pain since the operation, and the swelling and glazed appearance of the finger had greatly, but not quite completely disappeared. Sensation along the outer side of the finger was decidedly improving, so that the non-sensitive portion was now confined to a narrow strip on the outer edge of the finger, reaching from the second joint nearly to the tip.

On September 19, 1868, Mrs. ——— consulted Mr. Bickersteth. She was a healthy woman, 60 years old, but very active and vigorous for her age. In the previous May she suffered from a whitlow, situated at the base of the ring finger and adjacent portion of the palm of the right hand. To relieve this, an incision was made by her medical attendant on the inner side of the base of the ring finger, just below the cleft between it and the middle finger. She recovered perfectly from the whitlow; *i. e.*, there was no stiffness or contraction of the tendons as a result of the whitlow; but yet the hand did not regain its former strength, and soon the ring finger became the seat of excessive pain, which in time affected the others

also. The pain next extended up the arm, occasionally even as far as the shoulder. On examining the hand, the fingers were seen to be somewhat stiffened and attenuated, and presented, especially the fore finger, the peculiar glossy appearance of the skin mentioned in the previous case. The affected arm was distinctly smaller than the other, and had a wasted appearance. The constant worry of the pain, and the annoyance arising from the inability to use the hand, had considerably impaired the patient's health. On looking carefully at the site of the whitlow, the cicatrix of the incision above mentioned was seen to be seated exactly over the digital nerve supplying the inner side of the ring finger, a little beyond the point where it separates from the nerve supplying the adjacent side of the middle finger. It was considered that the nerve had been injured at this point, and that a portion of it should be excised, the patient being willing to undergo any operation in consequence of the increasing severity of the pain.

On September 22d, chloroform was administered, and, a tourniquet having been fastened over the brachial artery, in order to prevent any bleeding from interfering with the ease of the dissection, a good long incision in the line of the cicatrix and subjacent nerve was made, and, the nerve having been readily found, about $\frac{1}{2}$-inch was cut out. Several Pacinian bodies were dissected off the sheath of the flexor tendons, which, as well as the digital artery, was left carefully intact. The wound was brought together with three stitches, sealed up with a little scraped lint and styptic colloid, and a small splint put along the back of the hand and two first fingers.

On September 24th, two days after the operation, the patient called. The wound was still covered with a crust of lint and colloid, and there was no inflammation of the adjoining parts. She says that now she *has no pain in the fingers and hand, and none in the arm as far as the elbow,* although the shoulder and upper arm are still painful, but not exceedingly so. The inner side of the fore finger feels "queer" and numb, but sensation is not completely lost, while the tip is everywhere quite sensitive.

On September 29th, strapping and water dressing were applied to the wound, which was not completely united, but looking very well. There has been no return of pain in the hand or fore arm,

and in the shoulder and upper arm the pain is now only occasional. She was directed to rub with a soothing liniment, and ordered a tonic, containing quinine and phosphate of iron.

On October 15th, the patient was seen for the last time. The wound had been healed completely for about ten days. The backs of the fingers do not present the same glazed, tight, thin-skinned appearance which they formerly had, but the skin looks thicker and more natural, and has little wrinkles in it. The acute pain is quite gone, and the patient sleeps well, her only complaint being of a curious feeling along the under and inner part of the fore finger which the excised nerve had supplied, and of a little occasional aching in the shoulder. Her general health has greatly improved, and she can pick up things with the affected hand, and is rapidly regaining the use of it.

In his treatise on the diseases of the fingers and toes, Mr. Annandale narrates a case, which in its leading features is very similar to those just detailed. The patient inflicted with a sharp knife a wound over the palmar and lateral aspect of the first phalanx of the ring finger of the left hand. The wound healed at once, but soon she began to suffer extreme pain in and around the cicatrix. Burning sensations passed up into the hand, fore arm and elbow, and even into the arm. The elbow, wrist, and digital joints became stiff, the nails were dry and brittle, and the fingers had the characteristic glossy appearance. The slightest touch on the injured finger caused such distressing pain that the patient could scarcely permit the hand to be approached, much less manipulated. Curiously enough, she also began to suffer from burning sensations in her right hand, and sometimes in the soles of the feet. She was under the care of two medical men, who employed every kind of local palliative application and general tonic treatment in vain; and at last she willingly consented to have the finger upon which the cicatrix existed removed by Mr. Syme. In the course of ten days she was quite free from her former pains, and allowed Mr. Annandale to grasp the affected hand freely, move the fingers and wrist joint, and in fact handle the limb in a way she could not for amoment have borne previously. On dissecting the amputated finger, he

found that the digital nerve which lay beneath the cicatrix had been partially divided, and had become re-united. There was an enlargement upon it at this point. He also noticed that the Pacinian bodies in connection with the nerves and their branches on the palmar aspect of the fingers were particularly well developed.

These three cases present features of great similarity. In all, a cut with a sharp instrument was inflicted on a digital nerve. The wounds then healed well, but shortly afterwards severe pain arose in the cicatrix, which soon involved the affected finger, then the hand, and finally the whole arm and shoulder; and, in Mr. Annandale's case, the other arm and the soles of the feet seemed to suffer in a kind of sympathetic manner.

Although Mr. Annandale in his case discovered an enlargement in the affected nerve at the point of injury, and also a certain amount of vascularity beyond what was normal, I certainly must admit I could not find any indication whatever of the original injury in the excised portions of nerve which I examined. That this does not militate against the fact that the injury to the nerve was the *origo mali*, is shown by cases in which a mere prick has sufficed to produce symptoms similar to those described above. Wardrop detailed a case (quoted in Holmes' *System of Surgery*) where a woman pricked the fore finger of her right hand with a thorn. She suffered pain and swelling in the wounded finger, and part of the middle one. The swelling disappeared after some time, but the pain continued for months in the finger, the end of which was extremely sensitive. She had daily attacks of pain, which shot up the arm and side of the neck, producing a sensation in the hairs of the head as if they had become erect. To these feelings succeeded a dimness of sight; and the pain afterwards went suddenly into the stomach, followed by sickness and vomiting. She had constantly the feeling of a lump in her stomach, and always vomited after taking food or drink. The finger was amputated at the second joint, and in half an hour afterwards all her symptoms disappeared, her general health was soon completely re-established, and she never had the smallest return of her former pain.

M. Berard's case was a similar one. For the purpose of a galvanic experiment he had a needle forced into the branch of

nerve which issues from the supra orbital foramen, and an electric current was directed throughout the division of the nerve. At the instant, violent pains were felt over the forehead and crown of the head. The pains ceased when the needle was withdrawn, but some months afterwards a fresh attack of neuralgia was experienced in the division of the wounded nerve. The pain had the quotidian intermittent type, and gave way to the use of sulphate of quinine. After that period, repeated attacks of neuralgia occurred, with many years interval, some of which were excessively violent and long continued, and always seated in the frontal branches, but sometimes extending to the nasal and lachrymal branches of the ophthalmic nerve. Again, in former times, when bleeding from the arm was practised by any one, however unskilled, instances every now and then occurred where pricking or division of some of the cutaneous nerve filaments which run in close proximity to the median-cephalic and median-basilic veins, was followed by very severe pains in the arm. It is obvious, then, that if we find such severe effects from the mere puncture of a nerve, that the train of symptoms arising in the two cases first narrated, and in Mr. Annandale's case, can be quite reasonably ascribed to the injuries to the nerves severally received; that is to say, that the nerve injury was all along the direct cause of the pain, and that the patients were not mere hysterical women, suffering from a particular manifestation of the general malady which they ascribed to the occurrence of a slight cut on the finger. That continued irritation of even the minutest twig of a nerve may suffice to produce the greatest agony, is well illustrated by the following case, which, although not one of injury like the others, is yet, I think, sufficiently interesting to excuse its insertion.

The patient, a young woman, about 18 years of age, noticed, fifteen months before her application to Mr. Bickersteth, a little black spot on the back of the right forefinger, between the root of the nail and the first joint. She described it as having the appearance of the mark produced by a small splinter running into the finger. It increased in size, and eventually had the appearance of a corn. As it caused considerable pain, she con-

sulted a surgeon, who first applied nitrate of silver, but without effect, and afterwards cut the piece out. Some "proud flesh" appeared, and a white powder on lint was applied to the wound, which produced a slough. This treatment was most effectual, and the patient suffered no pain for many months, when the disease reappeared, exactly as before, as a black spot with a clear shining margin, only this time it appeared midway between the first and second joints, on the back of the second phalanx of the finger. This second growth was cut out slso, and the wound was healed in a fortnight. But it was very painful while healing, and as soon as it was healed, the cicatrix began to assume the same thickened corn-like appearance as the original growth. She now suffered intense pain all up the arm, even to the scapula, which existed night and day, completely wearing her out, and at night amounted to positive agony, which quite precluded proper sleep.

The affected finger was somewhat swollen about half way down, between the second and third joints, and the cicatrix was a smooth, slightly elevated, glassy-looking hardness, resembling a corn which had been pared down; the rest of the finger was not excessively sensitive, but the slightest touch on this point caused great agony. The callosity was carefully cut out, and when removed there were visible, in the bottom and at the edges of the wound, a number of Pacinian bodies. They were quite distinct, and there was no mistaking them; harder, whiter, and more oval than the surrounding fat granules. Six or eight of these were dissected away, and with some of them a filament of nerve was found, and *a very distinct nerve filament was also found running right into the callous cicatrix and incorporated with it.*

Next day patient returned, and stated that she was much relieved, *had but little pain in the day time, and had slept well nearly all night.* On March 12th, four days afterwards, patient said that she now had no pain whatever in the arm, although on the previous night there had been very uneasy pricking sensations in the finger and back of the hand. The patient came to present herself at intervals for about a month or more. The wound healed, leaving a smooth cicatrix, without any excessive contraction, and

not very hard. The pains lasted for some time abut the finger and hand, and then gradually became less and less, till at her last visit they had all but disappeared. She slept well at nights, and was rapidly recovering her strength, which had been so much worn out by the previous protracted and severe suffering.

To return, however, to the original cases of injury to digital nerves, there are one or two points of interest which may be noticed. In the first place, as was seen, Mr. Annandale in his case detected a certain amount of thickening and congestion of the nerve at the site of injury, and he also believed that the Pacinian bodies were increased in number and size. According to Bèclard, and other French authors who have paid some attention to the subject, after puncture of a nerve there remains either in the whole thickness of the nervous cord, or, if the puncture has been very limited, at one point of its circumference only, a hard opaque swelling of a fibrous consistence, which is invariably formed by a thickening of the fibro-cellular tissue. In the portions of excised nerve which I examined, I must frankly admit I could not find any change; but in the last narrated case, where a hard corn-like substance was removed, there was no doubt that the Pacinian bodies were, if not increased in number, (which I am strongly inclined to think they were,) certainly increased in size, as they could be picked out from among the fatty tissue with the greatest ease. In a case of injury to a digital nerve, followed by great pain in the arm and atrophy of the affected finger, which was admitted into the Royal Infirmary here some time ago, the finger was removed at the patient's urgent desire. A complete cure resulted, but I regret that I am unable to give the details of the case. However, I dissected the amputated finger very carefully, and certainly the Pacinian bodies were capable of being displayed with an ease which is not the case in a perfectly healthy finger. Until, however, I could see a few more such cases, I should not be inclined to make any distinct assertions as to the increase in size and number of the Pacinian bodies following nerve injury, as it is a difficult point to determine. My impression, however, is that such increase does occur.

In the second place, it is plain that the plan of excising a

portion of affected nerve is an immense improvement upon amputation, in all those cases where the nutrition of the finger has not been so much interfered with that general atrophy has resulted. If a tourniquet be applied so as completely to keep the wound free from blood, it is not by any means difficult to perform, and the advantages are so obvious as to require no comment.

Lastly, there are some curious points connected with the manner in which sensation was affected by the excision. In the first case, a portion of the nerve supplying the outer side of the fore-finger was removed to the extent of fully more than a quarter of an inch, and yet on the third day sensation was lost, not along the *whole, but only along the greater part*, of the outer side of the finger. On the ninth day the non-sensitive portion was confined to a narrow strip on the outer edge of the finger, reaching from the second joint nearly to the tip. Again, in the second case, where the digital nerve supplying the inner side of the ring finger was removed to the extent of nearly half an inch, on the second day after operation, the part supplied by the nerve felt numb, but was *not quite destitute of sensation*, while the whole tip was quite sensitive. These points seem worthy of notice, as showing that the branches of the digital nerves extend so completely round the fingers, that if one nerve be divided, the branches from the opposite one are sufficiently numerous, and their connections with the terminal branches of the divided nerve sufficiently free to maintain partial sensibility even over the part of the finger supplied by the divided nerve. That such a view is probably correct, is shewn by the very interesting observations which have been recently made by two French surgeons, MM. Arloing and Tripier, which tend to prove that the peripheral ends of the three nervous trunks (radial, ulnar and median) which supply the hand, remain sensitive, even if only one of these nervous trunks be left intact.

NOTES ON THE OPERATIVE TREATMENT OF INFLAMMATIONS OF THE EYES,

By T. SHADFORD WALKER,

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Few departments of medicine or surgery have witnessed greater changes, especially of late years, than that which devotes itself to the study and treatment of Diseases of the Eye. One of the most important, if not the most important of these changes is, the substitution of operative for continued antiphlogistic or expectant treatment, in disorders of an unmistakeably inflammatory nature, or where increased tension of the eyeball, accompanied with severe pain and rapid loss of vision of one or both eyes, occurs. The main object of the following brief notes and cases, is to point out where operations have been of use in instances coming under the writer's notice, and the symptoms or conditions which have rendered recourse to surgical interference necessary or expedient, as well as to indicate the danger of leaving changes of a character destructive to useful sight to go on unchecked, in the belief that modes of treatment in accordance with the views entertained before the most recent researches had brought better methods within reach, would prove serviceable or satisfactory.

Consistently with the limits of the paper, it will be convenient to restrict the diseases requiring operative interference to the following; since they are specially important, are met with most frequently in general practice, and exhibit in the plainest manner the good effects of the procedure recommended, viz.—keratitis with perforating ulcer and hypopion, strumous keratitis, with great vascularity of the cornea and deposit of lymph, sclerotitis, iritis, and glaucoma.

Before commencing a narration of cases, it will be well to

describe succinctly the two operations to which recourse is most frequently had for the relief of the above named diseases, viz. iridectomy and division of the ciliary muscle, since, although familiar to and recognised by oculists, they are not sufficiently so, to those who have not made ophthalmic surgery a special study to render some account of the mode of performance unnecessary. The third, paracentesis, or tapping the anterior chamber, explains itself.

Iridectomy then consists in the removal by excision of a portion of iris, generally of considerable extent, about one fifth, from any part of its circumference, at the discretion of the operator, though ordinarily that portion of iris covered by the upper lid is selected. The eyeball is first fixed by forceps, and the lids kept apart by a speculum. A lance-shaped knife, or Graefe's cataract knife, may be used for making the incision through the cornea, which should commence about half a line in front of the junction of the cornea and sclera, the knife being carried forward paralled to the iris, across the anterior chamber, should either cut its way out, as in the incision for cataract, if Graefe's knife is used, or be withdrawn through the original opening, if the lance-shaped knife is used. The iris is next seized with a pair of fine forceps, drawn gently outwards through the corneal wound, and the border nearest the operator is then cleanly cut with a pair of probe pointed scissors, after which, the remaining portion is snipped off, care being taken to have the cut edges evenly divided, and that no portion of iris remains in the wound. Any hæmorrhage from the cut surfaces into the anterior chamber should be removed with the spoon end of a curette. It is important that when iridectomy is performed for glaucoma or iritis, the iris should be removed quite up to its ciliary attachment, in order that the relief to the tension and inflammation may be as complete as possible. For other purposes, various modifications in the performance of the operation, and somewhat different instruments, are often required to suit special exigencies; the method just described is, however, the one most frequently practised in the treatment of the cases to which the paper refers.

Division of the ciliary muscle is useful in cases where there is

a considerable amount of inflammatory action going on in the iris, sclera or cornea, of a subacute character, and attended with moderately increased tension of the globe and general vascularity. Its good effects are most marked, when, in spite of constitutional and local treatment, the pain and congestion remain unrelieved, and deposit of lymph continues unchecked, whether these symptoms are caused by injuries to the eyeball, or arise spontaneously. It is a convenient substitute occasionally for iridectomy, where the latter may be required, but from any cause cannot be immediately performed; sometimes, indeed, in the slighter cases of increased tension, its adoption has rendered the performance of iridectomy unnecessary, though, undoubtedly, it cannot take the place of iridectomy, in serious or acute glaucomatous affections. Nor in milder cases should it be often repeated, unless marked improvement of vision and of the coexisting train of symptoms occur.

The operation is simple, and easily performed, as follows:— The patient being seated, the operator standing behind, with the patient's head resting against his chest, separates the eyelids with the first and second fingers of his left hand, at the same time fixing the eyeball with them; then with his right, he passes a broad cutting needle or Sichel's knife into the globe, and at right angles to its surface, just behind the junction of the cornea and sclerotic coats, to the depth of about one-sixth of an inch. So soon as the needle or knife has penetrated, he turns it across the incision, when there is a free escape of serous fluid and some blood. If the tension and engorgement are considerable, the fluid will often spirt out to some distance. If the operation is properly done, the anterior chamber should not be opened, nor ought the iris to be wounded, or protrude through the small opening in the sclerotic.

Case 1.—Acute Keratitis, with Sloughing Ulcer of the Cornea and great Sclerotic redness. A man, aged 50, while at work, received a blow from a piece of stone near the centre of the cornea. At the moment he felt great pain, which continued until the extraction of the stone four days afterwards. It was found to be imbedded in a hollow filled with pus, which had partially

separated the layers of the cornea, and found its way into the anterior aqueous chamber, to nearly the height of the lower edge of the pupil. The conjunction and the sclerotic were greatly injected; the pain in the eye and brow, especially at night, was so severe, that the patient could not sleep; by course, vision was very much impaired. The treatment consisted in the removal of the foreign body, in the evacuation of the pus accumulated in the anterior chamber by paracentesis with a broad needle, and in the division of the ciliary muscle. This last procedure became necessary, because, although the condition of the cornea was improved after the tapping of the aqueous chamber, the eyeball remained painfully tense and injected. These symptoms began to subside on the day after the operation, which it was not found needful to repeat; and the patient made a good recovery, the only obstacle to perfect sight, being a small nebula at the seat of injury; which, however, did not prevent his seeing sufficiently to do labourer's work. The only medicinal treatment employed, was the application of belladonna collyrium to the wounded eye, and internally, quinine in the day time, with two grains of opium in a pill at night, to ease the pain.

Case 2.—Acute Keratitis, with a large Excavated Ulcer at the inner margin of the Cornea, the result cold, over nursing, and neglect. The history of this case shews the importance of early treatment, where deep ulceration occurs in the course of keratitis, particularly where there is a drain on the vital powers. The patient, a married woman, aged 30, took cold in the right eye, for the relief of which, she went to a druggist, who treated her for upwards of a fortnight without benefit. When seen, the eye presented the following appearance. There was considerable conjunctival inflammation, but little sclerotic redness. A deep clear ulcer, the size of a large pea, was noticed at the inner edge of the cornea, communicating by a small round opening at the bottom of the ulcer with the anterior chamber, which was about one-third full of pus. The iris adjacent to the opening was adherent to the posterior layer of the cornea, and the pupil was small, but free. Paracentesis

was at once resorted to, and the whole of the pus let out; it re-formed, but was again let out, three days later, and has not since collected. The portion of iris which had been involved in the ulcer began to bulge, covered by a layer of lymph, so as to form a staphyloma. This was at once punctured, and snipped off level with the surface of the cornea, and pressure applied by means of a pad of lint, kept on by plaster and bandage over the closed eyelids. The general treatment was directed to ease pain and support the general strength. This patient is recovering, with some adhesion of the iris to the posterior lamina of the cornea, but with the pupil almost entirely free. When the ulcer had perforated the layers of the cornea, and the pus from it had dropped into the aqueous chamber, all that could be done was to limit the mischief as far as possible. There is little doubt that the gravity of the case was greatly increased by insufficient and unskilled treatment at the important early stage of the disorder, and by the weakness induced by nursing. It illustrates the advantages of operative procedure, as evidenced by the immediate benefit following paracentesis of the anterior chamber, and evacuation of the inflammatory products.

Case 3.—Strumous Keratitis, with intense vascularity of the Cornea, and deposit of Lymph between its layers. A young girl, aged 16, began to suffer from great intolerance of light, and the upper part of the left cornea was observed to be inflamed, the result it was supposed of a slight blow. After the disease had lasted four or five weeks, and various remedies had been used without apparently checking the spread or intensity of the malady, the eye presented the following appearance:— The eyelids were puffy, swollen, and excoriated at their edges, from the constant flow of tears; the conjunctiva was inflamed, without being chemosed, and the cornea was obscured over the upper and outer two-thirds of its extent by a deposit of lymph in the layers, whilst the surface was intensely injected, particularly at the part covered by the upper eyelid. The tension of the globe was also increased, though not greatly; the

ciliary muscle was divided, under chloroform, opposite the seat of greatest vascularity, and warm soothing collyria applied for several days, the eyelids being kept closed by pads of lint and strapping. Improvement was noticed the next day, and the case progressed steadily to recovery, without any repetition of the operation. In this case, the use of the chloroform (the effects of which lasted for some time) prevented the patient from experiencing the severe pain which is often felt when the inflamed sclerotic coat is punctured.

Case 4.—Diffused Suppurative Keratitis. A tradesman's wife, aged 45, who had been attacked with ptosis and paralysis of the internal rectus muscle of the right eye, accompanied by loss of sensation over the right side of the head, and impairment of vision in the same eye from which she had nearly completely recovered, caught a severe cold. She did not come under my observation for nearly a week, when the right cornea looked muddy over its whole surface. At the lower part, the anterior layer was stripped off, and its place occupied by stringy pus. In other parts, pus had begun to show itself between the layers. The conjunctiva was œdematous, the globe tense and painful, and there was only faint perception of light. There was every appearance of suppuration of the eyeball being set up. The ciliary muscle was at once divided, and the anterior layer of the cornea punctured with a broad needle wherever pus had formed. Two days afterwards, the operations were repeated, and again, after the lapse of three more days. The result of the treatment was, that the suppuration was arrested, the tension diminished and pain relieved, whilst a rim of clear cornea was preserved, through which it may be possible to make an artificial pupil hereafter. The only part where the cornea gave way was at the point where the pus first collected, but no staphyloma followed. Here, the severity of the attack and extent of the mischief, coupled with the previous malnutrition of the part consequent on the paralysis, at first seemed to render the case hopeless, and the saving of even the globe from suppuration and subsequent atrophy, almost vain, after a week had been allowed for the disease to run its course

unchecked. Probably, had earlier application been made, perforation of the cornea and purulent infiltration of the layers could have been prevented.

Case 5.—Recurrent Sclerotitis. A man, aged 35, a ship carpenter, who had frequently suffered from rheumatic imflammation of the eyes, but who at the time of application was free from any rheumatic pains, when first seen complained of severe aching pains in the left eye and eyebrow, which had deprived him of sleep for several nights. The sclerotic was congested, extremely tender to the touch in the ciliary region, and very sensitive on exposure to light. The tension of the globe was slightly increased. The iris was not altered in appearance, but its movements were rather sluggish. He could only read No. 10 of Jaeger's type with great difficulty; application of leeches and other remedies gave no relief. I therefore divided the ciliary muscle at the upper part, below the eyelid. At the time, the operation caused great pain, which subsided in the course of two hours, and he slept well that night. Three days afterwards, I saw him again, when he could read No. 6 Jaeger well; the pain and tension were greatly relieved; he could sleep and eat well. He went on improving for nearly a week, when, having carelessly exposed himself to a heavy shower of rain, all the symptoms returned with increased severity. The muscle was divided a second time, but, in consequence of the relapse so soon after the subsidence of the former attack, recovery was slower. The internal treatment adopted was the administration of turpentine in 15 minim doses every six hours, with occasional purgatives. Warm opiate washes were applied frequently to the eye, and a pad of lint soaked in the wash, for two or three days after each operation. He recovered perfectly in about three weeks after the relapse, and was quite free from any trace of the inflammation.

Case 6.—Chronic Recurrent Iritis, with closed Pupil. The patient, a woman, 34 years of age, had suffered from repeated attacks of iritis in both eyes, which had injured the texture of the iris, and had caused almost complete closure of the pupils.

She could still see well enough to find her way about the streets and in her own house, when a fresh attack came on. The remedies which had proved useful on former occasions, produced little effect. Partial alleviation of the pain was followed by relapse, and it was therefore determined, after the ordinary treatment had been persevered in for several weeks without subduing the inflammatory symptoms, to perform iridectomy in both eyes. This was accordingly done upwards, in the manner previously described, with the effect of freeing the patient from pain, loss of sleep, and the whole train of inflammatory symptoms, within a week. As the attacks of iritis were apt to recur, and so to produce closure of the new pupil, it was thought advisable to remove a large piece of iris, about one-fourth; and, as the greater portion of the gap so made was covered by the upper lid, the size of the new pupil was scarcely noticeable.

Case 7.—Acute Glaucoma. A farm-labourer, aged 52 years, was attacked suddenly with intense pain in the right eye, extending to the back of the head, as though his eye was being forced out. At the same time, he noticed that things looked very dim. He could not sleep for several nights. He was treated antiphlogistically, on the spot, with the effect of slightly relieving the pain; but, as the sight appeared to get worse rapidly, he came to Liverpool. On examination, the eye-ball was very tense, the power of vision was limited to the perception of bright objects, or light; he could not read type of even the largest size, No. 20 Jaeger, and the left eye felt weak, he said. He was, as might be expected, much reduced by the pain and loss of rest. It was at once determined to iridectomise the right eye. About one-fourth of the iris was removed from the upper portion, with marked benefit. The symptoms above enumerated steadily abated, and he began to perceive the outlines of persons and objects, within a fortnight from the time of operation. In this case, no other treatment would have availed to save the eye, nor would a good result have occurred if the operation had been delayed. In no disease of the eye is delay so dangerous as in acute glaucoma; and wherever a patient complains of the above-

named, or analogous symptoms, no time should be lost in urging him to submit to an iridectomy at once. Patients are, from time to time, seen by oculists, who have either refused to undergo an operation, or who have not been warned of the fatal consequences of loss of time in this disease. If the early opportunity is lost, and the patient waits until he feels the beginning of the same symptoms in the other eye,—it may be this time in a more chronic form,—it is almost always too late for iridectomy to save or restore any sight in the eye first affected; and as regards the chronic form of glaucoma, this operation is seldom followed by such good results as when it is resorted to in acute glaucoma, since the delicate structures of the eye have been undergoing slow destructive changes of structure, and cannot be restored, even when the tension which caused the injury, is taken away.

ON SEA SICKNESS.

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It is a common opinion that little or nothing can be done to alleviate sea-sickness; or, as it is said, there is no *cure* for it. Frequently the ship surgeon is not applied to until the sufferer is alarmed at the extreme degree of exhaustion to which he or she is reduced. My experience would lead me to the conclusion that in most instances very great relief may be afforded, at all stages of the affection, by the judicious use of medicines, carefully regulated diet, and other measures. The subject of sea-sickness has not received the attention it deserves from those who have the greatest opportunities of observing it, and the greatest facilities for its treatment; namely, surgeons to passenger vessels.

Since my own observations were made, however, I have met with one or two excellent papers on sea-sickness*, the authors of which seem to have rightly appreciated many of the symptoms of this malady, and have given some valuable hints as to its treatment. There still appears to be room for further work in this direction, for it is only by the analysis of accumulated experience and observation, that the nature of diseases and their appropriate treatment can be determined with any satisfaction. When we consider the serious, occasionally fatal, consequences of sea-sickness, and the obstacle which it presents to crossing the water to pleasure and health-seekers and business-men, it will, I trust, need no apology for inviting attention to the subject, and recording my own experience of the malady, and what appears to me to be its rational treatment.

* Dr. F. W. Fisher, on Sea-sickness. *Dublin Medical Press*, December, 1847. Dr. John Alston, on Sea-sickness. *Glasgow Medical Journal*, January, 1863.

Sea-sicknesss might fairly claim a place in our standard works on medicine, but it is with one or two exceptions excluded from these; and it is not uncommon for young surgeons, immediately after passing their examinations, to take medical charge of hundreds of passengers, without having any idea of a disease they will be so soon called upon to treat.

The ordinary symptoms of sea-sickness are well known.

There is sudden giddiness, slight at first, but increasing with the rocking motion of the vessel. There is also a distressing feeling of weight and uneasiness about the epigastrium. These may be the only symptoms, if the weather is not very boisterous, but in long passages, the cause usually continuing to operate with increasing intensity, nausea and vomiting speedily follow.

The first accession of vomiting may be accelerated by some slight exciting cause,—if we may consider anything but direct irritation of the stomach to be an *exciting* cause,—as the sight or smell of food, the smell of tobacco-smoke, or a sudden whiff of the oily heated air from the machinery and furnaces, which acts as an effectual emetic when added to the disposition to be sick. Should the voyager retire to his berth, the breathing and smelling of the peculiar close air of the cabin, the sounds from the sick which greet his ears, and the sight of the basins and other preparations for a sick bout, all combined, increase the tendency to vomit.

Some slight relief is experienced after vomiting once or twice, but usually the patient, as we may now consider him, is not let off so easily. The food remaining in the stomach is first rejected, and afterwards a greenish-yellow gastro-bilious matter, which is often thrown up in large quantities. The salivary secretion is much increased. The frequency of the attacks of vomiting at first appears to bear some relation to the pitchings or rollings of the vessel, or as an American writer expresses it, "the heave interiorly corresponds to the heave exteriorly." Diarrhœa occasionally occurs at this stage; more usually constipation is present throughout. The greater or lesser irregularity of the ship's motion has also a sensible effect in determining the degree of sickness.

With a short chopping sea, in a small steamer, very few landsmen escape, even though the rolling of the vessel be inconsiderable.

Many persons cannot travel by railway without experiencing uneasy sensations in the stomach; but here, the motion being of a tolerably regular kind, vomiting does not commonly occur.

After the rejection of the food it contained, the stomach is irritated by its own juices and the bilious matter which is poured into it. These *digestive fluids* continue to be secreted in large quantity, and, having no food to work on, appear to act as direct excitants to the stomach, which rejects them as they accumulate; hence the prolonged and distressing retching. This will be referred to more fully, when speaking of the pathology of the disease.

Short intervals of rest are obtained when the stomach is *entirely empty*, but as soon as the gastro-bilious matter collects, retching again occurs. The straining may be so great as to cause vomiting of blood

The sensations of the patient are miserable in the extreme. He lies almost inanimate, except when compelled to vomit, seemingly indifferent whether he may live or die. His extremities are cold, and he complains of numbness over the surface of the body. I have frequently observed great sopor at this period of the sickness; the patient lies in a heavy stupid sleep between the accessions of vomiting. Some rest is doubtless obtained in this manner, but the patient awakes for a moment, feeling cold and miserable, not possessing sufficient energy to put on additional covering, and, after vomiting, again relapses into sleep. It would seem as if the will to move were paralysed. From twelve to fifteen hours out of twenty-four may be passed in this sleep. The urinary secretion is usually diminished. In favourable cases the vomiting and nausea subside spontaneously, and a ravenous appetite succeeds to the loathing of food before experienced. In other instances the vomiting or retching continues, nothing but greenish gastro-bilious fluids, with mucus, being rejected, fairly exhausting the invalid by its frequency, and by rendering him unable to take food. The exhaustion may be so great that the patient's life appears in imminent danger. His sufferings are increased by thirst, headache, and spasmodic pain in the stomach. Following the stage of coldness of the extremities, and pallor of the face, there is occasionally

a good deal of feverishness, a flushed face, hot skin, and furred tongue, and the urine containing lithates. The duration of the sickness depends in a great measure on the greater or lesser susceptibility of the patient to it, and partly on the treatment. Many old sailors never entirely overcome this susceptibility, and suffer if the sea is at all rough.

In voyages of more than a week's duration, presuming that passengers get sick on the first day, a small number will have recovered on the third day, and the majority by the fourth or fifth. Women suffer more severely than men, as a general rule. This, however, is in part owing to their remaining so long in their berths, while the men go earlier on deck. Infants, very young children, and old people are said to escape sea-sickness; and so far as my experience goes this observation is correct. Some persons do not entirely recover until their arrival in port. In these "chronic" cases, the patients suffer most in the morning and early part of the day, while in the evening they may be tolerably well. Sea-sickness usually terminates in recovery, but great debility may ensue from it and continue for a very long time. I have known it to terminate fatally, although not in the cases under my own observation.

The exertion of vomiting is not without danger in the case of pregnant women. M. le Coniat, of the French transatlantic mail packets, states that he has seen five cases of abortion in thirty-eight crossings.* This does not seem a large number; but in order to estimate the relative frequency of abortion, it would be necessary to ascertain the total number of pregnant women on board. Dr. Alston† and M. le Coniat* have observed, that on sea the menstrual periods are more frequent than usual. The secretion of milk is often arrested in nursing women, occasioning great trouble with the infants. The constipation, which is such a constant symptom, usually disappears when the patient begins to take food; it may, however, require medicine for its cure. Sometimes it is followed by

* *Arch. dé Med. Navale*, Nov., 1868, quoted in the *Medical Times and Gazette.*

† *Glasgow Medical Journal*, January, 1863.

a sharp diarrhœa of an irritative character, occasioned probably by matters remaining in the bowels from the commencement of the sickness. A weak and irritable state of the stomach, resembling sub-acute gastritis, may remain for a long time after the sea-sickness proper is cured.

Pathology. The immediate cause of sea-sickness appears to me to be referable to the shock, or the series of shocks, to the nervous system, produced by the motions of the vessel. The action of the heart is deranged through reflex influence, and the cerebral and general circulation partake of the universal depression causing anæmia of the brain and enfeebled circulation throughout the body.* The giddiness and faintness are the result of the deficiency of the blood supply to the brain. To the general shock may be added that conveyed to the nervous centres by the momentary displacements of the viscera, especially the stomach, and that caused by the feeling of insecurity when the vessel begins to roll. The stomach is also affected through reflex action, and is rendered unfit to digest the food it contained, and which it accordingly rejects. The first effects are really beneficial; the circulation is lowered, and has time to adapt itself to the varying positions of the body, and the stomach is emptied of indigestible food. A precisely similar condition may be induced in some persons, by the motion of a railway carriage, or of a common swing.

Shock produces the sickness in the first instance, and this cause continues to operate until the patient becomes *habituated* to the

* Dr. F. W. Fisher believes that there is anæmia of the brain, and that the diaphragm is excited by sympathy to contractions, producing vomiting. *Dublin Medical Press*, 15th December, 1847, p. 376.

Dr. John Alston believes "the true nature of the disease to be functional derangement of the brain-mass, produced by a constant succession of slight shocks to which the nervous centres are subjected." *Glasgow Medical Journal*, January, 1863, p. 446.

Dr. Darwin ascribes sea-sickness to a disturbance of the brain consequent on the unusual impressions produced upon the vision by the motions of the vessel. *Wood's Practice of Medicine*, 3rd edition, vol 1, p. 562.

The impression on the vision has, I consider, some effect in causing sea-sickness, by contributing to the shock of the nervous system, but its influence is less than Dr. Darwin supposes.

movements of the vessel and insusceptible to the shock. This may be called the first stage of sea-sickness. But here other sources of irritation come into play, and retard the recovery which nature endeavours to procure. The stomach is weakened by the exertion of vomiting, as well as by the shock, in which the whole system participates. One of the effects on the stomach of shock, is to exalt its sensibility to a high degree, rendering it intolerant of the presence of any substance, so that it is quite unable to receive food, and the patient loathes the very sight of it. The gastric juices appear to be secreted very actively, probably from the irritation of the stomach produced by its being thrown about with the unusual motion.* These secretions would, under other circumstances, be employed in digesting food, and, having performed that office, be again absorbed into the system, or rejected with the excreta. Their normal function being suspended for want of material to work on, the supply of digestive force is in excess of the demand, and their influence is expended in irritating the stomach until rejected by vomiting. And although a slight effort would be sufficient to effect this, yet on the first attempt to vomit, at each accession of that process, a spasmodic action of the stomach and of the muscles engaged in vomiting occurs, until the *fit* of retching has ended. This, the second stage of sea-sickness, may last for a variable time.

The re-action of the gastric fluids is very acid, reddening strongly blue litmus-paper. There is therefore a quantity of acid fluid of an irritating character being poured into the stomach, and one indication of the treatment is to neutralise its acidity, by which means its irritative qualities are lessened. With this intent alkalies are given, as will be seen when we come to speak of treatment. The giving of alkalies refers only to the time that the gastric fluids are free in the stomach, and continue to be vomited; for afterwards, when all vomiting has ceased, there is a deficiency of acid in the gastric fluids (in consequence of so much having been rejected) to digest the food *which the patient is now able to take.*

* It is possible that the gastric juices proper are vomited in a crude and imperfect condition, unless we can suppose that the stomach is able to form elaborated gastric juice in such a short time as elapses between the vomitings.

And at the commencement of convalescence, patients almost invariably crave for acids (to supply the deficiency), such as pickled meats, lemon juice, acid wines, etc. Some have a great desire for common salt.

That the *continuance* of the sickness is due in a great degree to the irritation produced by the digestive juices on the empty stomach, receives confirmation from the fact, that ladies and delicate persons, even after several days of sea travelling, and when they consider that they have become quite accustomed to the sea, frequently experience a return of sickness on awaking in the morning, when the gastric secretions appear to be in excess; a quantity of gastro-bilious matter is vomited, and the sickness ceases *for the day*, as soon as they have taken food. This form of sickness occurs in many persons, however, without their going to sea. Violent, or even moderate, exertion before breakfast will with some bring on nausea, or vomiting (of gastro-bilious fluids).

The influence of what physiologists call *habit*, in its power of enabling the body to tolerate at length the sudden changes of position, which in unaccustomed persons produce sea-sickness, is here seen in a remarkable manner, and is as difficult to explain in this instance, as in many other examples of its effects. Habit appears to be the power which the system possesses of immediately *giving out* and *directing* nervous force, in obedience to constantly or frequently repeated demands for it under similar conditions. It appears strange that the body should, in the case of sea-sickness, be (at first) so little tolerant of a sudden change of position, while in gymnastic exercises, for instance, every conceivable change of position is experienced without any effect on the stomach. And towards the end of a moderately long voyage, those who were the first to suffer when the vessel moved out of port, can now walk the deck with an air of enjoyment and a steady gait, as the ship rolls and pitches. From *habit*, the heaving of the ship ceases to produce a shock, the stomach is unaffected, and the muscles are enabled to balance the body according to the movements of the vessel.

The only explanation one can suggest is, that in the former case the will of the individual is not called into play as the directing power—the nervous system is taken by surprise, and has not time

to adapt its emissions of nerve-force to the new state of involuntary motion of the body. In the case of gymnastic exercises, the will directs the movements, and the whole system is prepared for the change; and in that of the habituated sea-traveller, the change is expected, or *perceived simultaneously with the change*, and nervous force sufficient to resist the shock is instantaneously supplied throughout the system. We may judge of what occurs in those parts of the economy presided over by the organic or involuntary nervous system, by what we see taking place in those more directly under the control of the will. Thus, in standing or walking on board ship, the habituated sea-traveller almost insensibly, and with scarcely an effort of the mind, instantly inclines his body to the right as the ship rolls to the left. This facility of adapting the position of the body to the varying motions of the ship is termed by sailors "having one's sea legs." At the commencement of the voyage it is quite a study to keep one's balance, even with those who do not suffer from sea-sickness. The supplying and directing of nervous-force, as controlled by the will, can be understood from an illustration occasionally quoted in the physiological lecture-room. If a person attempts to lift a heavy substance under the impression that it is very light, he will probably fail altogether, or raise it a short distance and let it fall; but if he has an idea of the weight beforehand, he may be able to lift it with comparative ease. In the one case, the nervous system is taken by surprise, and the requisite amount of nervous force is not developed. In the other, the nervous system is forewarned, and prepared for the demand made on it.

There are a few fortunate individuals, who appear totally insusceptible to the shock producing sea-sickness, no matter how rough the sea may be.

Whatever be the state of the nervous system which protects the habituated voyager from shock, it continues in a greater or lesser degree, so as to produce the sensation of heaving (as observed by Dr. Alston), for some time after land is reached. The state of motion, which at first was abnormal, has now *from habit* become normal, and nerve-force continues to be directed to the requirements of a condition which no longer exists.

Having discussed in detail the symptoms and pathology of sea-sickness, we may now venture to give a definition of the malady.

Sea-sickness may be defined as a peculiar condition of the nervous system, produced by shock, resulting from the motion of a ship. The most prominent symptoms are a state of general depression, giddiness, vomiting, and derangement of the bowels and urinary secretion.

Treatment is in accordance with the views expressed as to the pathology of this affection. Such means should be used as would tend to lessen or counteract the nervous shock, and sustain the system during its continuance, and attention should be paid to the stomach, bowels, and other organs, and to the individual symptoms as they arise.

Before undertaking a voyage, the diet should for some days be light and non-stimulating. Alcoholic drinks, if taken at all, should be used sparingly.

If this regimen be followed, aperients and "blood-cooling medicines," so often used, will not be necessary. Some of the worst cases I have seen were men who had indulged rather freely in eating and drinking before starting, and had spent the night previous to their departure in a cup with their friends. Great bodily fatigue, from want of sleep, etc., should be avoided, so that the traveller may be able to cope with the sickness with his whole strength. After going on board, the voyager should remain as long as possible on deck, where he will have the benefit of the fresh air and also become more easily accustomed to the changing positions of objects. The shock conveyed through the medium of vision is thus lessened and the feeling of insecurity dissipated; or, as a passenger said to me, "by remaining on deck you know where you are, in the cabin you cannot tell the ceiling from the floor." Unfortunately, on the first sensation of giddiness, the deck and fresh air are deserted, and the women, and many of the men too, lie helplessly in their berths, until a particularly calm day induces them to venture forth. It is recommended to walk briskly up and down the deck, or to engage in some laborious exercise, such as pulling the ropes with the sailors, etc., and these means will

certainly aid in overcoming the sickness. They are only applicable, however, in a very limited number of cases, as in yachting; and those who work hardest escape best. While these measures will lessen the violence of the sickness, it seems necessary that some vomiting should take place, to lower the circulation and relieve the stomach of food which it cannot digest, as already explained.

There is no remedy for sea-sickness equal to the fresh sea air, and the occasional sprinkling one gets from the spray is very grateful and reviving. Let the sea-sick patients, therefore, by all means remain on deck, if the state of the weather permit. If the patient is a lady, she should be warmly wrapped up in shawls, and recline on cushions placed on the deck. The recumbent posture is the natural position of rest, relieves the giddiness by favouring the flow of blood to the brain, and gives the greatest ease to the stomach. A patient will thus frequently remain tolerably well all day, and only experience a return of the sickness on retiring to her room for the night.

The best way to secure the advantages of the fresh air, and at the same time to have the means of reclining comfortably, is to procure a room on deck, when possible. The patient may then leave the window open and remain in bed, if it is too cold or too wet to go on deck. During the summer months this may usually be done with safety and comfort, but in winter, on the American passage, the sea is sometimes too heavy, and washes over the deck, so that rooms below are preferable. As much time as possible, however, should be spent on deck. In the centre of the vessel the motion is least, and those are fortunate who can secure berths amidships. Other measures of great value are, to roll a binder firmly too or three times round the middle of the body; this appears to lessen the spasmodic action of the stomach and muscles engaged in vomiting; and if the patient be in his berth, he should lie on his back, with the head low, fixing himself as firmly as possible by making his head touch one end of the berth and planting his feet against the other, so as to become as it were a part of the vessel. Some however, obtain most relief by lying on the side, or on the face.

In very severe cases a hammock bed may be used. As

regards medicinal treatment, sedatives, anti-spasmodics, and diffusible stimulants are indicated. I have found such combinations as the following very useful.

Sodæ Bicarb., gr. 10.
Tinct. Valerian Ammon. m. xv.
Spir. Chloroform, m. xx.
Tinct. Lavand. Co., m. xx.
Mucil. Acaciæ, ʒi. ss.
Aquæ Camph. *ad* ℥i. ss.

A draught of this kind to be taken every hour, or every second hour. The soda and ammonia are given to counteract the irritating acid secretions in the stomach. The spirit of chloroform should be stronger than the officinal, so as to give from 5 to 10 minims of chloroform for a dose. The valerian has an excellent effect. Hoffman's anodyne and hydrocyanic acid may also be very advantageously used. I have tried bromide of potassium, but my experience of it is not sufficient to enable me to form an accurate estimate of its effects. I think, however, it would prove a useful remedy. External sedative applications to the stomach especially in "chronic" sea-sickness, are productive of good effect; as

Liniment of Chloroform,
Liniment of Aconite,
Liniment of Camphor,
} equal parts.

M. le Coniat employs faradisation of the epigastrium, and applies a solution of sulphate of atropia over that region. He states that this method has been very successful. I have no experience of it. The forehead and head may be bathed with Eau de Cologne, and the vapour of ammonia inhaled through the nose occasionally. Ice sucked slowly allays the thirst, relieves the clamminess of the mouth and throat, and is an excellent sedative to the stomach.

In cases of great restlesness and frequent vomiting, with inability to sleep, a full dose of opium, as recommended by Dr. Chambers, frequently arrests all these symptoms, if it can be kept down long enough to be absorbed by the stomach. Mr. Thomas Johnston recommends the subcutaneous injection of morphia;* and the

* *Medical Times and Gazette*, April 10th, 1869.

suggestion appears most valuable. In the subcutaneous administration, there is no danger of its being rejected by vomiting. Opium (like other sedatives) appears to act by diminishing the sensibility of the stomach, and rendering it less susceptible to reflex influence and the irritation of its own juices, but it cannot lay claim to be a specific.

These measures, followed up persistently for a few hours, will generally induce sufficient quietness of the stomach to enable it to receive food; but it is necessary to ascertain what kind of food will be borne. Light semi-fluid food is best suited; arrow-root is the best I know of to commence with; it should be made with little or no sugar, and given in tea-spoonfuls at intervals of a few minutes. This can generally be kept down; but even should it at first be rejected, the starch has a sedative effect on the stomach, and by degrees a portion is sure to remain.* The patient may now try some well toasted bread the carbonised portion of the bread acting as an absorbent of the irritating matters, together with some light soup without fat. It is highly important that a sea-sick patient, especially if very ill, should not be neglected. Efforts should be made, again and again, and at very short intervals, to induce him to swallow food after the first stage is past; nor should this course be deviated from even if much of it is rejected by vomiting; a small quantity will remain, and save the patient from the great exhaustion brought on by want of food and sea-sickness combined. When food is once retained and the gastric fluids fairly occupied, convalescence may be said to have commenced; but the greatest care is still necessary with regard to diet. Thick chicken broth with a little of the meat will be suitable, after which the patient may take something more solid. Most convalescents after sea-sickness crave for something acid, such as pickled fish, and salt meats with pickles; and I have always gratified this *instinct* for acids, as I found that fresh meats were positively loathed and re-induced vomiting. The physiological reason of this desire for acids has been already mentioned. It is better to give acids with food

* The above line of treatment accords in the main with that proposed by Dr. Alston, in his excellent paper, viz. — Alkaline drinks to neutralise the acidity of the stomach; and for food, beef tea and arrow-root, or sago.

than in a medicinal form. Food should at first be taken on deck, or where there is a free circulation of air; and the vicinity of the machinery and cooking department should be avoided. In the early stages, alcoholic stimulants, so commonly used, are injurious, increasing the tendency to vomit. In the second stage, and in "chronic" sea-sickness, with great exhaustion, stimulants are better borne, and may be given freely, as in other affections of great debility. Brandy, the acid wines, and in some cases champagne, may be given according to the patient's taste, which I found to be the best guide in selecting a stimulant. They should be iced. The irritative diarrhœa which often occurs during convalescence is usually cured by a dose of castor oil, which clears out offending matters; it is sometimes, however, exceedingly troublesome. The systematic treatment of sea-sickness applies rather to long voyages than to short ones. In voyages of less than twenty-four hours, the arrival in port and removal of the cause of sickness obviate the necessity of further treatment. For short voyages, the best that can done is to be careful about diet before starting, to remain on deck if possible, to avoid alcoholic stimulants, and follow the general directions already given. It might appear difficult to carry out the foregoing rules of treatment in dealing with large numbers of emigrants, but the worst cases should be seen to by the surgeon personally, and the steerage stewards instructed how to act with others. A great deal of good may be done by making the emigrant passengers go on deck; indeed it is surprising how they can remain in the atmosphere of the steerage, an atmosphere which may be *felt* on sea-sick days, even with all the improvements in ship ventilation; yet it sometimes requires little less than main force to induce them to go on deck. There is every facility on board the steamers for giving them, when ill, any diet which may be ordered by the surgeon.

The practical test of treatment of disease is the result obtained. I have had every reason to be satisfied with the effects of the treatment here sketched out, while I have seen numberless failures from so called specifics.

Since the foregoing pages were written, I have become acquainted with Dr. Chapman's work on Neuro-Therapeutics and Sea-Sick-

ness. Dr. Chapman treats sea-sickness by the application of ice along the spine. He says that "experience has proved it to be peculiarly successful, precisely in those diseases in the treatment of which all known drugs have been proved most impotent; and to no disease is this remark more applicable than it is to sea-sickness." He holds "that the proximate cause of sea-sickness consists in an undue amount of blood in the nervous centres along the back, and especially in those segments of the spinal cord related to the stomach and muscles concerned in vomiting. All the nerves emanating from it partake of the increased activity of the cord itself, and convey from the centre to the periphery of the nervous system an abnormally large number of exciting impulses." These exciting impulses (he believes) result in a copious secretion of mucus in the stomach and bowels, vomiting, sometimes diarrhœa, and coldness of the extremities from the contraction of the minute arteries. Cold to the spine exerts a sedative influence on the spinal cord and the nerves issuing from it, as well as on the sympathetic trunks lying on either side of the vertebræ. The nervous currents are thereby lessened, and the various symptoms arrested. Dr. Chapman appears to have had great success by his mode of treatment. I regret that, in making my own observations, I had not the opportunity of employing this method; but from the fact of my not having done so, I am enabled to express the more strongly my dissent from Dr. Chapman's opinion that medicines are useless in sea-sickness, having had evidence of their good effects which I could not doubt. In sea-sickness, as in many other affections, we are often able, by the administration of medicines, to temporise, and keep the enemy quiet sufficiently long to allow the patient partially to recruit, and continue the combat with sickness on more equal terms. But there is no medicinal panacea for sea-sickness; each case must undergo a regular course of treatment, according to its particular indications; and the various nostrums and "infallible cures" for this affection have no other use than perhaps to allay the fears of the credulous voyager, until his stomach rejects them as worthless.

CLINICAL OBSERVATIONS ON SUB-MAXILLARY CELLULITIS,

Being a Lecture delivered at the Royal Infirmary, July 19th, 1869,

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Gentlemen,

Our subject to-day is one of great interest. We have just left the bed-side of a patient in 19 Ward, who is now happily recovering from a condition which a few days ago was one of imminent peril, and who has been rescued from this state, I believe, by the prompt adoption of means which to many of you must have appeared extraordinary, but which in my opinion are essential for the safety of a patient under such circumstances.

The subject of our remarks suffered from diffuse cellulitis in the sub-maxillary region. Diffuse inflammation of the areolar tissue in the inter-muscular spaces extends, as its name implies, indefinitely in all directions; and, other things being equal, it is according to the extent and position of the affection, that danger is to be apprehended.

The disease may be idiopathic, but it much more commonly arises from injury, and is specially apt to occur from punctured wounds, into which some septic matter has penetrated, and after compound fractures and amputations. It has a close analogy to erysipelas, arising under similar circumstances and running a similar course; indeed it has been well described as a form of this disease. It may terminate in resolution, but more generally passes on to gangrene of part or the whole of the cellular tissue, and involves the destruction of the venous

trunks and capillaries in the immediate neighbourhood. Not unfrequently, as might be expected from this circumstance, (and specially when the cellulitis has followed compound fracture,) mortification of the whole limb occurs. Very often, we observe the first characteristic symptoms of pyœmia commence within a day or two of the period when decomposing sloughs have formed in the midst of cellular inflammation. And even if the patient has escaped these imminent dangers, the simple destruction of large quantities of cellular tissue, which invariably attends diffuse cellulitis passing on to suppuration, is so formidable a complication, that should the patient have sufficient strength to recover, the limb will probably be found a useless incumbrance. Such are the perils attending the latter stages of this disease. They do not arise till sloughing, suppuration, and decomposition are in progress, and this seldom occurs till after the fifth or sixth day.

But it is in regard to another danger that I desire to speak to you to-day, a danger that arises in the very earliest stages, if the inflammation is situated in the sub-maxillary region, and involves the areolar tissue about the base of the tongue. In this situation, the disease is often idiopathic; at any rate I have seldom been able to discover that any injury has preceded the attack. It is possible that some foreign substance, a husk of corn, a minute bone, or a piece of bristle, for instance, may have punctured the mucous membrane at the floor of the mouth, and been unnoticed. Nay, so rarely do we see diffuse cellulitis in other parts, without previous injury of some sort, that this is more than probable. However arising, the symptoms and appearances are very characteristic of the affection, and the inflammatory action is peculiarly prone to extend backwards, and cause œdema glottidis, sometimes indeed at a very early period of the disease.

Perhaps the best mode of putting the subject before you, and of impressing it on your memory, will be to mention a few cases, in the order they have presented themselves to my notice, Until the year 1861, I had never seen, or at least had never recognised, a case of this kind, but then one presented itself here under circumstances that I cannot forget.

Case 1.—A man æt. 40, walked up to the Hospital one evening and requested admission. He spoke with great difficulty and indistinctness, so that it was impossible to obtain much information from him. His breathing was embarrassed. There was great swelling beneath the jaw. The floor of the mouth was raised, and the tongue pushed upwards and backwards against the roof of the mouth, so that no examination of the fauces could be made. Mr. Nash, who was the House Surgeon at the time, recognised the peculiarity and urgency of the case, and very properly requested my immediate attendance. In the mean time, he ordered the man some stimulants, and sent him to bed. I happened to be at home, and came up at once, when I was informed the patient had died suddenly a few minutes before. The following report of the case, and of the post-mortem examination, was drawn up by Mr. Nash.

A. B., aged about 40, was admitted, suffering from urgent dyspnœa with impending suffocation. The history was scanty, and difficult to obtain, on account of the precarious condition of the patient. From what could be gathered, it appeared that about three days before his admission, he was seized with rigors and severe pain in the sub-maxillary region, shortly followed by swelling, which prevented his swallowing with facility, and affected his breathing. He was only slightly inconvenienced at first, and therefore thought lightly of it, but, finding all the symptoms gradually increasing in severity, upon the third day he sought medical advice, and came here. Upon admission, the patient evinced a most painful expression of countenance. There was a distinct and uniform fulness in the front of the neck, extending from the lower jaw to the upper part of the sternum. The pomum Adami and trachea were completely obscured. The skin was tense, but was neither changed in colour nor consistence nor were its movements upon the sub-structures more interfered with than the tension would account for. Upon manipulation, a general solid condition of the deeper structures was felt. The tongue itself was healthy; but it, together with the floor of the mouth, was pushed considerably upwards. The patient was placed in bed, and took some brandy. Shortly afterwards, there was a sudden and severe exacerbation of

symptoms, so much so, that before the House Surgeon could be summoned, the man had died asphyxiated. *Autopsy.*—Shortly after death, a puncture was made with a tenotomy knife into the floor of the mouth, when a small quantity of air and some sero-sanious fluid escaped. Thirty-six hours after death, the neck was carefully examined. Nothing abnormal was discovered superficial to the deep cervical fascia, but beneath this there were evident traces of diffuse cellulitis. All the muscular interstices and the connective tissue surrounding the trachea was infiltrated with a sero-purulent fluid, extending upwards to the root of the tongue and downwards into the anterior mediastinum. The sub-mucous cellular tissue was also similarly affected, producing anteriorly the sub-lingual distension already alluded to, and posteriorly œdema glottidis and general œdematous laryngitis. The sub-lingual and the sub-maxillary glands were surrounded by inflammatory exudation, but their glandular tissue appeared perfectly healthy and natural. The tracheal mucous membrane was quite healthy.

Such was the first case that occurred in my experience. It was evidently one of diffuse cellulitis, originating among the muscles at the base of the tongue, extending downwards and causing death in three days by œdema of the glottis. The skin you will observe was somewhat tense from the swelling beneath, but was otherwise unaffected.

Case 2.—On the evening of the 6th of November, 1862, I was requested by Mr. Parke, of West Derby, to visit with him a lady, and to bring with me my instruments, as the patient was threatened with suffocation. The friends gave me the following history. Though never enjoying vigorous health, the lady, a woman of full and stout habit, aged about 50, was generally tolerably well, and had not complained before the previous Saturday, the 1st inst. She then had several slight shivering attacks, felt ill, and complained of pain beneath the lower jaw, particularly on the right side. A little swelling was observed in this position, and attributed to inflammatory action in the sub-maxillary glands. The next day, (Sunday,) and on Monday, the swelling and pain had increased, and she had considerable fever.

The day following, (Tuesday,) the symptoms were more urgent, and there was difficulty in swallowing and in opening the mouth. A consultation was arranged, and on Wednesday, Mr. Stubbs saw and examined the case. There was then a considerable diffuse swelling, occupying the entire sub-maxillary space, and extending on either side beyond the angles of the jaw. The floor of the mouth was noticed to be raised, and by placing one finger in the mouth and another outside beneath the jaw, Mr. Stubbs thought he could detect an indistinct sense of fluctuation. Deglutition was very difficult, the articulation indistinct, and the constitutional symptoms severe. No fluctuation could be felt by pressure outside; still Mr. Stubbs felt confident that the next day it would be evident, and requested Mr. Parke to open it as soon as possible. The next afternoon Mr. Parke was called, as the patient had shortly before become much worse. He found her breathing with difficulty and the swelling larger. The difficulty of breathing increased, and at 10 p. m. I was requested to see her. I found her in great distress; the head thrown forwards, the face inclined upwards. She was sitting up in bed supported by pillows. She breathed with great difficulty, owing evidently to obstruction at the back part of the throat and about the glottis. Her countenance was suffused and dusky, the lips blue, skin moist, pulse weak, between 130 and 140. The whole of the anterior and lateral parts of the neck were much swelled, so that the space between about an inch below the skin and the sternum presented a decided convexity. The swelling extended laterally on each side to the parotid space; above, it was limited by the base of the jaw bone. Below, it gradually subsided over the upper part of the sternum and inner third of the clavicles, which were lost in the general tumefaction. The skin of the neck was everywhere of a bluish dusky colour, but not inflamed nor thickened, nor œdematous. On making pressure with the hand, the swelling felt soft, and yielded readily, except at the upper third, where, corresponding with the sub-maxillary space and across the whole width of the neck, the parts beneath the skin felt very firm, tense and unyielding. On examining the state of the mouth, which was accomplished with some difficulty owing to the patient being unable to separate the teeth beyond a very

limited extent, the mucous membrane of the floor was found to be raised to a level with the top of the lower teeth, of a deep purple colour, and œdematous. The tongue itself was not enlarged, but pushed upwards and backwards towards the back of the mouth. On feeling the floor of the mouth, it felt soft, and yielded readily to pressure, but I could not detect fluid, either with the finger in the mouth, or assisted by the hand pressed on the outside at the same time; neither could I feel from within the firm resisting swelling in the sub-maxillary space which I felt outside.

I regarded the case as one of diffuse cellulitis, involving, originally, the parts in the sub-maxillary space and about the base of the tongue; and, remembering the appearances presented in the previous case, I strongly supected œdema glottidis had already come on. Suppuration had not yet taken place, or at any rate could not be detected; yet I considered a free incision to relieve tension and favour resolution, or possibly to give vent to some effusion, afforded the only chance of the patient escaping speedy suffocation. I dared not make any opening within the mouth, for I dreaded the consequences of increasing the difficulty of breathing that might arise from even a small quantity of blood in the fauces, in her exhausted state. I proposed to make a free and deep incision from the outside, and divide all the indurated textures down to the floor of the mouth and base of the tongue. Mr. Parke approved, and, the consent of the patient and friends being obtained, I proceeded to make an incision exactly in the median line, commencing about an inch from the point of the chin downwards, to the extent of between three and four inches. I divided the skin and fascia in the first instance, and then carefully and slowly cut deeper, keeping exactly in the middle line through hard dense structures to the depth of at least two inches. Then, introducing my fore-finger into the wound at its upper part, I found I had cut through the whole thickness of the induration, and that I had entered a cellular space beyond. Putting a finger of the other hand into the mouth I was satisfied I had divided everything except the mucous membrane of the floor of the mouth. At this stage of the operation, I fancied I heard air

escape from the incision, and accompany each expiration. I called Mr. Parke's attention to it, but before we could either of us be quite positive on the point the sound ceased. No pus or serum was seen to flow from the incision, and as I had only cut entirely through the induration at the upper part of the incision I then made the wound of equal depth throughout; but still I did not see any matter flow. The bleeding throughout was insignificant, and pressure with the finger deeply on one side of the incision soon controlled the little hæmorrhage that continued.

On recovering from the influence of chloroform, a decided improvement in the breathing was observed. The countenance appeared less suffused, and the lips less blue. The dusky blue colour of the integuments over the upper part of the chest was, moreover, decidedly less. After removing the patient to bed, and when all bleeding had ceased, a thin transparent brownish serum was observed to flow from the wound, and to collect again quickly when wiped away. Poultices of linseed meal were ordered to the neck, and changed every three hours. A draught containing liq. opii sed. ʒss. was given: wine and beef tea *ad libitum*.

November 7th.—Has passed a restless night. The breathing, though less difficult, is still very uncomfortable, and much impeded by mucus collecting in the mouth, which she is unable to get rid of. The difficulty and pain of swallowing is such as almost to render it impossible. Generally, every attempt is followed by violent cough and choking, arising apparently from some of the fluid passing into the trachea. The swelling of the neck is rather less, particularly at the lower part, and over the sternum, where it has decidedly diminished. No change is observed in the interior of the mouth. Countenance looks better and the patient expresses herself easier than yesterday. The great trouble is the pain and difficulty of swallowing. The same kind of fluid, but in larger quantity, is discharged from the incision. Pulse 130; tongue cannot be protruded.

November 8th.—Slept better last night, and feels better. Breathing more comfortable; pulse 110; skin cool and moist; countenance good; swelling of neck decidedly less at every part, and now much more localised in the sub-maxillary region. At

this part it still feels very firm and unyielding. A larger quantity of fluid is now constantly oozing from the wound, and it is more purulent in character. The act of swallowing is fully as difficult as ever.

November 9th.—Has slept very tolerably, and looks decidedly better. Breathing comfortable; swelling of the neck much less, and now confined to the sub-maxillary space. In this situation, apparently owing to the subsidence of the general tumefaction, the sub-maxillary and sub-lingual glands form three distinct prominences, the right sub-maxillary being the largest of the three. There is now a profuse discharge of thick brown pus from the incision. The articulation is more distinct, but swallowing is as difficult as before, the difficulty appearing to arise more from imperfect power to perform the act than from pain accompanying the attempt. As it seemed probable that, unless more nutriment could be taken than heretofore, the patient would be exhausted, beef-tea and brandy enemata were ordered, and arrangements agreed upon for administering food through a catheter, introduced through the nose into the œsophagus. The mouth can be opened better, and admits of examination. The mucous membrane generally is much swelled, of a dark colour, and covered with large apthous patches.

November 11th.—Can swallow fluids much better the last two days. The swelling is decreasing, the discharge quite purulent, and very plentiful. Constitutional symptoms less severe. Can protrude the tongue about half an inch between the teeth. The swelling of the sub-maxillary glands is still very considerable, and feels very firm, particularly on the right side. The floor of the mouth less raised, and the mucous membrane generally looked healthier.

From this period, all progressed favourably. The discharge diminished, and with it the swelling. In the course of a week or ten days, the lady had fully recovered.

Here are two important cases, the first one fatal, and the second one saved, and saved apparently by adopting the means which had been unfortunately neglected in the first case, *i. e.*, a free and deep incision to relieve tension, to favour resolution, and to lessen the

œdematous swelling of the epiglottis, which in this affection is so likely to prove fatal.

The third case I shall relate very briefly. It is curious how these things happen in runs. It is now some years since I have seen a case of this kind, but at this time several occurred in my own practice.

Case 3.—I was called by Dr. Falloon to see a young man, a draper's assistant, residing near the bottom of Manchester-street. There was diffuse cellulitis beneath the lower jaw. It had been preceded by a rigor, and was accompanied with difficulty in breathing, and trouble in articulation. I was called, as we often are in urgent cases, late at night. The swelling extended nearly from ear to ear, filling up the whole of the sub-maxillary space; the skin was not involved, but tense; the mucous membrane of the floor of the mouth was raised, and the tongue pushed upwards. As the distress was great, I suggested the importance of making an incision, but as it was late at night, and there was no gas in the room, I did not like to perform the operation with an uncertain light. I proposed it should be left till the next morning. In the meantime I left word that if he was worse I should be sent for. He got worse within a few hours, and before assistance could be obtained died suddenly, from suffocation, the result of œdema glottidis.

Case 4.—Mr. Hutchinson, of Upper Parliament-street, asked me to see a gentleman, æt. 48, whom he had been attending for five days, and who was threatened with suffocation from acute inflammation in the front of the neck. The patient was a stout, plethoric man, and had previously enjoyed good health. Five days before, after exposure to cold, he was seized with a rigor, and shortly afterwards a swelling appeared, accompanied with pain and stiffness below the jaw. This continued to increase, in spite of treatment, and for two days before my visit had produced such distress that he had been unable to articulate or to swallow. For twenty-four hours, his breathing had been much embarrassed, so that he dared not lie down, nor attempt to rest. I found him propped up in bed, with his head thrown forwards and upwards, breathing laboriously, from accumulation of mucus in the fauces. The

floor of the mouth was raised, and the tongue pushed against the upper and back part of the palate. The whole of the front part of the neck was much enlarged, and presented a complete convexity, from the chin to the upper part of the sternum. The skin was tense, and of a dusky colour, but not inflamed. The enlargement was equal on both sides. It felt very firm and unyielding at the upper part, but was softer below. I could not detect fluctuation at any part. The pulse was 120 and full.

The suffused countenance, the difficulty in breathing, and the intensity of inflammation round the front of the fauces, were so indicative of immediate danger, that Mr. Hutchinson concurred with me in the necessity of adopting prompt measures for procuring relief. Accordingly, the patient being seated in a chair, opposite the window, I made an incision in the median line, from a little below the point of the chin, directly downwards for more than three inches. After the skin and fascia were divided, I cut slowly deeper and deeper through dense brawny structures to the depth of between two and three inches, and directly towards the base of the tongue. Then introducing my finger, I found I had entered a cellular space, and that a little sero-purulent fluid exuded. The bleeding was so slight, that no vessel required ligature. Immediate relief followed. The countenance improved, and the breathing was less embarrassed. That night he slept better than for several preceding ones. The next day the discharge from the wound was more profuse, and the patient was able to swallow some fluid nourishment. His recovery continued without interruption, and in about a fortnight he was able to go out and take exercise.

Case 5. In the year 1865, a young man was admitted into No. 5 Ward, with a severe lacerated wound of the soft parts of the thigh, caused by machinery. Erysipelas followed, and the youth was much reduced, but was slowly recovering from its effects, when sub-maxillary cellulitis came on. It was of a comparatively mild and asthenic form, and caused so little increased disturbance of system, or difficulty in swallowing, that danger was not apprehended. Following an attack of erysipelas, I anticipated the formation of abscess, rather than the ordinary course of diffused cellulitis, and

watched the case closely, with a view to evacuate pus, as soon as I could detect fluctuation.

The floor of the mouth was raised, and the tongue pushed upwards, but there did not appear to be any impediment to the breathing, and he was able, though with difficulty, to take a fair amount of nutriment. For a week matters went on this way, not getting worse, but still without amendment. The distress was not so great as I had previously observed in these cases, and the exhaustion of system, consequent on long confinement, and an extensive wound, followed by erysipelas, was such that I felt anxious to avoid making any incision, unless it should prove to be absolutely necessary. So nothing was done beyond the application of fomentations and poultices, the administration of tincture of iron, and as sustaining a diet as possible. Nine days from the beginning of the attack, and without any increase in the symptoms, the man was seized during the night with a paroxysm of choking, and died suddenly before the house surgeon could be summoned.

On post-mortem examination, the epiglottis was found enormously enlarged, from œdematous infiltration; but there was little or no contraction of the rima, and no trace of inflammation of the larynx. The cellular tissue beneath the jaw, and among the muscles at the base of the tongue, was everywhere infiltrated with purulent matter, and *débris* of dead membrane.

I beg you will remember this case, for it was somewhat peculiar. I had hitherto held that difficult breathing, from obstruction in the neighbourhood of the larynx, was a principle feature of œdema glottidis, and that unless this symptom was present, we need not fear its existence; yet here, you will observe, there was but little trouble with the respiration. We have learnt by painful experience, that deep-seated cellulitis cannot long continue in this region, without great risk of œdema glottidis, and that delay in making the proper incision for its relief may prove fatal.

Now let us speak of the present.—Case, No. VI. Sarah Broonall, æt. 19, a servant, was admitted on the 13th of July. She said that fourteen days before admission she caught cold, by getting her feet wet in washing, and her throat became a little swollen and painful. The next day this passed off,

and she continued well until July 12th, when the same symptoms returned as in the first instance, *i. e.*, difficulty in swallowing, from a swollen and sore throat. The following day she was admitted here, and had then a diffuse hard swelling beneath the jaw, extending nearly from ear to ear. On the 14th I saw her, and recognised the conditions I have spoken of. The swelling was much more on one side than the other, the right being the largest. The skin moved freely over the swelling. It was not inflamed, but stretched from the swelling beneath. She had great difficulty in articulation, and we could not understand a word she said. She was utterly incapable of swallowing, and scarcely able to separate her teeth. On getting her to open her mouth a little, we found its floor was raised to the level of the lower teeth and œdematous. The tongue itself was somewhat swelled, and pushed against the upper part of the mouth, so that it was impossible to get any examination of the fauces. There was, moreover, considerable febrile disturbance of the system. The distressed and anxious countenance, the inability to swallow, difficulty of breathing, and impossibility of articulation were so evident, that, from the experience I have derived from the cases just narrated, I had no question of the patient's imminent danger. I apprehended the extension of inflammatory exudation to the epiglottis and larynx, producing œdema of these parts, and leading to the suddenly fatal issue which occurred in three of the cases I have just described. Recognising this imminent danger, I made the free incision I have described, and which I believe ought to be made in all such cases when this risk exists. I say when this risk exists. Don't misunderstand me. In the early stage of this affection, when the swelling has only existed a few hours, or a day or two, when there is no great difficulty in swallowing or in breathing, when the tongue is not pushed up materially, nor the floor of the mouth raised, do not suppose I would at once advocate an operation. A milder treatment may then be tried: the application of leeches over the tumefaction, a sharp aperient, such as calomel and jalap, and soothing applications, fomentations, or linseed poultices. These means will very often, I am quite satisfied from experience, prove beneficial, and relieve the patient from the necessity of any

further treatment. It is only when milder treatment has failed, and when we meet with a case in the condition I have described to you, that an incision is required. Now a word about the situation of the incision. To cut merely through the skin will do little or no good. It is the deep cellular tissue that is involved. The incision, to do good, should go fairly through the whole thickness of the inflamed textures; and where can we do this with safety except in the median line? Only there can we divide the textures without dividing important blood vessels and nerves. Thus, although the swelling may be chiefly on one side, we make the incision in the middle line, its deepest part reaching inwards towards the epiglottis; and although the most intense inflamation may not be here, we approach the part where its consequences are most to be feared, and afford a free exit for the discharge of inflammatory fluids. This is the point then where the incision can be made with safety, and with good effect. It should extend from near the point of the chin, downwards, to the hyoid bone, and deeply upwards and backwards towards the base of the tongue. As far as my experience goes, whenever this has been done, it has not failed to relieve the patient from the danger I have mentioned. In fact, in every instance the patient has recovered. Remember the patient who had erysipelas of the thigh, and afterwards sub-maxillary cellulitis, in this hospital, where we watched him closely, always ready to operate, but never doing so. On this account I impress upon you the importance of making a free incision, in case the patient is not relieved by milder treatment. The case we are now considering had this incision made last Wednesday, and each day since has steadily improved. The same night she could breathe and swallow better, the swelling is falling fast, febrile excitement is diminishing, and she may be said now to be out of danger. No pus flowed when the incision was made. We hardly expected it would, for the inflammatory products are so infiltrated among the tissues that they do not escape at the moment of incision. The next day however, matter began to flow, and now the wound discharges freely.

I can hardly suppose you can confound sub-maxillary diffuse cellulitis, with glossitis or inflammation of the tongue, whether

acute or chronic. The two affections present entirely different appearances. In acute glossitis the tongue itself is enlarged, often enormously so, and of a deep purple colour. It is too large to be contained within the mouth, and therefore, besides filling up its whole cavity, generally protrudes somewhat between the teeth. There may be some swelling beneath the jaw, associated with this condition, but the essential feature is enlargement and inflammation of the tongue itself. In sub-maxillary cellulitis, on the other hand, the tongue is not enlarged, but pressed upwards against the roof and back of the mouth by the swelling beneath it.

It has been very commonly observed, on examination after death from laryngeal disease, that although death has evidently been due to suffocation, we seldom find the degree of contraction of the laryngeal orifice we should have expected. This is more especially the case, when the disease has been either as in croup or diphtheria of an acute inflammatory nature, or there has been ulceration which has suddenly become more acutely inflamed. We are apt to forget that the larynx is a highly sensitive organ, supplied with nerves and surrounded with muscles capable either of contracting or of increasing the laryngeal aperture. In the acute affections I have mentioned, the constricting muscles are irritated and spasmodically contracted, so that during life a greater degree of contraction exists than after death. In these affections we find relief is derived from opium, belladonna, and other narcotics which relieve spasm and lessen irritability. In other affections, such as œdema glottidis, and particularly the form of œdema arising from inflammations near to, but not in the larynx itself, the narrowing of the orifice is more passive; and in these cases, there is strong instinctive and voluntary effort on the part of those muscles, whose function it is to maintain the orifice open, to act. The patient dare not lie down or compose himself to sleep; if he were to do so, he feels he would surely suffocate; and probably he is quite right in this idea. Narcotics under these circumstances would do harm, by paralysing and lessening the sensibility of the muscles on the action of which his very life depends. But however strong the instinctive and voluntary effort may be, however effectually these efforts may overcome the œdematous

constriction for a time, the period during which they can be maintained is limited. Sooner or later the fatigued muscles are completely exhausted, and then death is the immediate result. Thus we can explain the apparently sudden dissolution in cases of œdema glottidis. The patient has often a tolerable pulse, and air in sufficient quantity appears to enter the lungs with each inspiration, there is perhaps no blueness of the lips, or lividity of the countenance, yet in a moment he may die from suffocation.

Do not suppose that I question the powerful action of those muscles which enlarge the rima glottidis when contracted, whatever the cause of the contraction may be. They act with all the power they can exert. In the one case, however, they appear to oppose muscles spasmodically contracted, but in the other a mere passive filling up of the orifice. Hence arises the different influence of narcotics on the two kinds of laryngeal contraction. But the important bearing of these observations is with regard to the period at which we ought to interfere by operation, in order to give relief to the sufferer, who is slowly, yet surely becoming exhausted, in consequence of laryngeal obstruction. Many times I have had cause to regret delay. Overlooking the history of long continued difficulty in respiration, I have regarded simply the apparent actual condition of the patient, and waited till too late to be of any avail. On the other hand, I may say I have never regretted being too prompt. The proper time to operate is when milder measures have failed to give decided relief, or immediately, if the distress is great, and has continued already for a day or two.

I must not close this lecture without cautioning you regarding the use of chloroform in operations under these circumstances. It is too great a boon to be lightly dispensed with, yet, if used at all, it must be with extreme caution. Chloroform acts like any other narcotic. It removes pain and distress, and takes away at once both the instinctive necessity and the power of action of the voluntary muscles, on which alone, perhaps, the continuance of respiration depends. Those of you who were here yesterday afternoon, had the opportunity of witnessing a well marked example of this. The patient suffered from tubercular ulceration

of the larynx, and was in such distress from impending suffocation, that he had not laid down or slept for several nights. He was brought to the Hospital to have the operation of tracheotomy performed, for it was evident he could not much longer continue the forcible efforts he was compelled to make in order to breathe. He walked into this room, and lay down on the table while preparations were made for the operation. His pulse was quite steady, and tolerably full, and, as he wished to have chloroform, I did not object. After a few inspirations, however, the breathing became slower, and less complete. The voluntary muscles on which his respiration mainly depended were becoming paralysed, the sense of constriction of the larynx, which compelled him to use these muscles, was benumbed by the choloform, his pulse continued good, but the breathing became less and less complete, till within a minute or two, it altogether ceased. Of course the chloroform had been removed, he had not taken it altogether for more than two or three minutes. The pulse continued good for another minute or two, I opened the trachea instantly, and had just slipped in the tube, when the pulse was reported to have stopped. At this moment the man's appearance was certainly that of death—his eyes fixed, and the pupils dilating. One or two forcible compressions of the chest sufficed to re-establish respiration, and the pulse returned. The patient has since gone on favourably, and will probably recover. Yet the exhaustion consequent on his previous prolonged and forcible efforts are such, that whenever he falls asleep, his respiration becomes so slow and imperfect as to threaten dissolution, and I have therefore directed the nurse to watch him constantly, and to rouse him whenever his breathing appears to be failing. He is fed with brandy, beef tea, and eggs, and enemata of the same have been administered several times.

ABSTRACT OF THE PROCEEDINGS OF THE LIVERPOOL MEDICAL INSTITUTION, FOR WINTER SESSION, 1868–69.

I.—*Pathological Specimens exhibited.*

By Dr. Braidwood.

1. Specimens of foreign bodies impacted in the œsophagus. The first was a case in which a triangular piece of porcelain had been swallowed in some bread and milk, and had caused a small lacerated wound in the posterior wall of the œsophagus, having made its way into the posterior mediastinum, where it had caused an abscess. The chief symptoms were dyspnœa, dysphagia, and emphysema beginning on the right side of the neck. Another specimen was that of a handkerchief almost entirely impacted in the œsophagus, said to have been swallowed by a girl suffering from typhoid fever. A fish-hook was also shown, which had been swallowed, but had been removed by forceps, under chloroform.

2. A renal tumour, from a child, aged 22 months. The swelling had only been observed for three months, and had rapidly increased. Large veins coursed over the abdomen. There was great emaciation, œdema of the legs, and the urine became much diminished in quantity some time before death. The tumour weighed 10lb, and was of the nature of medullary cancer, affecting the left kidney and suprarenal capsule. A section presented various characters in different parts, and the microscopic appearances also varied; cancer-cells with renal tubes being present in one part, and granular matter, without cancer-cells, in another.

3. "Brain of a child, with a deposit of lymph upon it."—The child was seven years old, and about three weeks since vomited and became suddenly unconscious. There was heat of head, squinting, convulsions and rigidity alternating on opposite sides of the body,

the convulsions being sometimes general. Both the squinting and convulsions ceased some time before death. The *dura mater* was found adherent to the skull, and a layer of lymph, a quarter of an inch thick, existed on the surface of both hemispheres; brain substance softened; excess of fluid in ventricles; vessels congested and convoluted. Dr. Braidwood believed that there were collections of white corpuscles in the vessels of the grey matter, forming minute emboli.

By Mr. Harrison.

"Atrophied bones of fore-arm," removed by amputation from a woman, aged 50, who was suffering from strumo-syphilitic disease of the face and right arm. The bones were diminished in length and circumference, the shortening being due to atrophy. The humerus was fractured just above its lower extremity, though there was no history of injury. The other structures were all converted into a fatty, gelatinous mass.

By Mr. Banks.

1. "Diseased Spinal Cord," removed from the body of a young woman, who strained her back over the arm of a sofa while resisting a criminal assault. The chief symptoms were pain, pricking in the legs, and rapidly-developed paraplegia the day after the injury. Death occurred on the tenth day, preceded by sloughing, &c. The post-mortem examination revealed that the membranes of the cord were distended with serum, a small quantity of lymph existed under the arachnoid, and that there was complete disintegration and acute softening of the whole thickness of the cord, to the extent of half an inch. There was no apparent injury to bones or ligaments.

2. "Obliterated Arteries."—The patient was a young man in good health. His right foot became acutely inflamed, without any cause, and then gangrenous. The gangrene spread, and amputation was performed below the knee; the stump mortified, and death followed. Very little hæmorrhage occurred during the operation. On examination, the arterial trunks, from the bifurcation of the aorta as far as both popliteals, were found converted

into fibrous cords. The tibial vessels were pervious. Mr. Banks considered it a case of "Plastic Arteritis," and that portions of coagula, getting into the main branches of anastomosis, had prevented the collateral circulation being established.

3. "Malformed Foot."—The three inner toes and a large portion of the front of the foot were greatly hypertrophied, and the impediment it caused in walking necessitated amputation. The deformity was congenital.

4. Two specimens of "Senile Gangrene" of the hand and fore-arm, due to thickening and calcification of the arteries.

5. Two specimens of "Fractured Skull," with injured brain.—In one case a large quantity of brain substance had been lost and a "fungus cerebri" formed, while the lateral ventricles had been opened.

6. Portion of "Strangulated Intestine," which had been returned by operation, but had suddenly given way by two small openings through which the contents of the bowels had escaped. Death occurred from collapse.

7. "Uterine Tumour."—During life it presented all the characters of an ovarian tumour, and a large quantity of fluid had been removed by tapping. Ovariotomy was performed, but at the operation it was found that the tumour was connected with the upper and posterior part of the fundus of the uterus. It was determined to remove the uterus altogether. Death occurred soon after the operation.

8. "False Joint in the bones of the leg," from a child, in whom every means had failed to produce union.

9. "Osteo-cephaloma of the lower jaw," from a woman, aged 78. Many years ago she had had the lip removed for cancer, but the jaw had only been affected a few weeks.

10. A "Lamb's Head," presenting the monocular form of monstrosity.

By Dr. Cameron.

1. "Aneurism of the arch of the Aorta."—The only prominent symptom was intense pain in the back, just below the left scapula,

also felt round the body, and in the epigastrium. There was dulness on percussion, but no bruit. The aneurism was about the size of a cocoa-nut, and occupied the whole of the posterior mediastinum. Four or five of the vertebræ were eroded.

2. Another specimen of "Aneurism of the arch of the Aorta."—The patient was a man, aged 40; he had been ill three months, the first symptoms having been dyspnœa and cough. After this the patient became unable to lie down, had stridulous breathing and aphonia. There was dulness on percussion in the upper sternal region and above and below the clavicles, but no murmur. The respiratory sounds were feeble on the left side. Death occurred suddenly from hœmoptysis. A small aneurism was found at the junction of the ascending and transverse portions of the arch of the aorta, and had ruptured into the trachea. The aorta was extensively atheromatous, and there were abundant apoplectic clots in the lungs.

3. "Kidneys containing small Abscesses," removed from the body of a woman, who had suffered from acute rheumatism, followed by a slight attack of diphtheria. The patient became very low and ill, suffered from vomiting, with great epigastric tenderness. Her urine became albuminous, and afterwards contained pus. Death occurred in three weeks. The kidneys were found highly congested, and a number of small abscesses existed in their cortical substance.

4. "Tubercular Lung, with rapid development of Emphysema." A patient, in the first stage of phthisis, suddenly suffered from urgent dyspnœa, followed by hæmoptysis. The physical signs gave evidence of emphysema of the bases of both lungs, but particularly of the left. The hæmoptysis ceased two days before death, the patient became livid, had orthopnœa, and his pulse was scarcely perceptible. Death occurred suddenly. Miliary tubercles existed in the upper lobes of both lungs, while their margins and the lower lobes were emphysematous. Dr. Cameron thought it was an instance of emphysema, developed from one part of the lung having to do extra work. Death was due to the obstructed circulation induced by the emphysema.

By Dr. De Zouche.

"Congenital dislocation of the Radius."—It existed in both forearms. The ulna occupied the whole of the articular surface of the humerus. Supination was rendered impossible.

By Dr. Gee.

1. "Aneurism of Abdominal Aorta."—The patient had been a soldier 21 years, and for two or three years had perceived a hard swelling in the region of the stomach. He also suffered from cough and dysuria. When first seen, the chief symptom was constant vomiting; a large tumour was felt in the epigastrium, which had no fluctuation, pulsation, or bruit, and seemed to be connected with the left lobe of the liver. Tubercles and vomicæ existed in the right lung. Death took place suddenly. A large aneurism was found close to the cœliac axis, pressing the stomach upwards and forwards, passing downwards between the folds of the peritoneum, and resting partly against the spleen, partly against the inner margins of both kidneys. A second tumour existed between the layers of the mesentery, full of coagulated blood, and there was a small rupture in it, allowing its contents to be discharged into the abdominal cavity, which contained a large quantity of coagulated blood. There was an opening in the aneurism, an inch by three-quarters, and communicating with the second sac.

2. "Abnormal Heart," removed from the body of an infant, aged five months, who had suffered from the usual symptoms of cyanosis. No murmur existed, and the heart-sounds were regular, distinct, and of equal duration. On examination it was found that there was a large patent 'foramen ovale;' the left ventricle was hypertrophied, and the aorta dilated; while the right ventricle was hardly discernible, and the pulmonary artery almost obliterated.

By Dr. Skinner.

"Adherent Placenta."—It was a good example of phthisical placenta. The patient from whom it had been removed was the mother of three living children.

By Dr. Burton.

"Diseased Heart," removed from the body of a little girl who had suffered from rheumatism and afterwards from scarlatina. The aortic and mitral valves were diseased, and the heart somewhat enlarged.

By Dr. Rawdon.

1. "A Heart, showing extensive disease of the Aortic Valves." The patient was 50 years old, and died of empyœma.

2. "A Heart, exhibiting disease of both Mitral and Aortic Orifices." The former scarcely admitted the little finger.

3. "Stricture of Œsophagus at Cardiac end."—The patient was a man, aged 43. The principal symptoms were great dysphagia, emaciation, and pain in the epigastrium. The strictured part was not much thickened, and presented an ulcerated surface on examination. The lungs afforded evidence of long-standing phthisis. This patient had well-marked bronzed skin, but the supra-renal capsules were healthy.

4. "Cancer of Colon," from a woman, aged 46, who was suddenly seized with vomiting and constipation. Her bowels were freely relieved, but she gradually sank. On examination, at one part of the descending colon, schirrhous deposit was found, The bowel was distended above and contracted below this point. No cancer existed in any other part.

By Dr. Davidson.

"Stricture of Urethra, with diseased Kidneys." — The patient had suffered for six months from gradually increasing dysuria. He died suddenly in a kind of fit. He had just returned from the West Coast of Africa. The stricture existed at the usual spot, and was permeable. There were several false passages. The kidneys were atrophied, especially their pyramidal portions, and their capsules were very adherent. The other organs were congested and the heart dilated. On opening the cranium, a quantity of gelatinous effusion was found beneath the arachnoid. Dr. Davidson believed that death was the result of some poison in the blood, either malarial, or due to suppression of urine.

By Dr. Lyster.

1. "Aneurism of the arch of the Aorta."—It caused extreme dyspnœa; and had produced caries of the spine from pressure. The physical signs were dulness behind the manubrium, and a diastolic murmur. The aneurism was very large, and a smaller one existed near the diaphragm. The heart was healthy, but the aorta presented atheroma and calcification.

2. "Cancer of the Intestines."—The patient, a woman, aged 50, had suffered for months from constipation and debility. Peritonitis set in. She vomited much, but the vomited matter was never stercoraceous. A large dilatation was found about the centre of the ileum, and a cancerous stricture below this; then a second dilatation and stricture; and then the intestine turned upon itself, and there was a third stricture. Cancer also existed in the mesocolon and pancreas. There was a perforated opening in the cœcum through which the fœces had escaped, causing peritonitis.

By Mr. Hamilton.

"Intestine in a case of Strangulated Femoral Hernia."—The hernia had existed from girlhood, the patient at the time of the operation being 53 years of age. There were the usual symptoms of strangulation. On opening the sac, a large piece of omentum was found, with a small portion of intestine not very dark; these were returned, but the vomiting continued, purging set in, and death took place in four days. The intestine was found in the peritoneal cavity, of a dark colour. A small, round, yellow ring existed at one point, which had almost ulcerated through, but there was no actual gangrene.

By Dr. Glynn.

"Calculus removed from the scrotum of a boy, aged seven years." It had formed very rapidly, producing a hard tumour. It was readily removed, and found to be contained in a thickened sac of cartilaginous consistence in front of the testicle, communicating with the urethra. It had probably formed on a nucleus of uric acid.

By Dr. Roberts.

1. "Urinary Calculi, with diseased Urinary Organs."—There had been symptoms of calculus and enlarged prostate for some time. The patient was admitted into the Northern Hospital in a very low state, and died in a few days, without any other symptom than debility. At the autopsy, the bladder was found to contain some thick white fluid, and three calculi, one about the size of a pigeon's egg, and the other two as large as beans. These were composed of uric acid. Bladder very much thickened and contracted, and its mucous membrane in an unhealthy condition. Prostate gland enormously enlarged, its middle lobe forming a large prominence with a deep pouch behind it. Kidneys small, contracted and nodular; presented a number of small superficial abscesses. The section was very pale, and there was hardly any distinction between the cortical and medullary substances.

2. "Diseased Heart."—The patient was a man, aged 61, suffering from extensive dropsy. Heart's action successively rapid and irregular, impulse very intensive, weak and jerking. Murmurs existed both at the base and the apex. The jugular veins pulsated and filled from below. Death resulted from peritonitis after tapping for ascites. Both lungs were extensively emphysematous. Heart weighed 22 ounces, being greatly hypertrophied and dilated. The tricuspid orifice admitted seven fingers. There was abundance of calcareous deposit in the aortic valves, and the mitral valves were atheromatous. Liver weighed 56 ounces, and presented a nutmeg appearance on section.

3. "Enlarged Heart," removed from a negro, who had suffered for two months from extensive general dropsy, from which he gradually sank. There was no history of rheumatic fever, or of any serious illness. The enlargement of the heart was found to be chiefly due to hypertrophy and dilatation of the left ventricle. It weighed 26 ounces. The valves were tolerably healthy, but the aorta was atheromatous. The liver weighed nearly 5 lbs., and was fatty.

II.—*Cases related or exhibited.*

Mr. Harrison introduced a man, the whole of the inner portion of whose hand had been crushed on a railway, the thumb only

having been left entire. The case was exhibited to illustrate the importance and utility of the thumb alone.

Mr. Baily alluded to a case, in which he had lanced a child's gums, and the bleeding did not cease for five days, having continued uninterruptedly for two days.

Dr. Desmond reported a case of rapid development of fever from mental anxiety. A lady mentioned to a friend a case of typhoid fever she had seen. The latter lady brooded over it, declared she should be attacked with it, which proved to be the case, and she died.

Mr. Warburton brought forward the case of a child, who had died suddenly of hæmorrhage from the throat during convalescence from scarlet fever.

Mr. Higginson mentioned a case of abscess in the neighbourhood of the parotid gland, opening into the mouth. An external incision was made, and the case did well.

Dr. Telford related a case in which a tumour was noticed immediately after parturition, by a midwife, and supposed to be a second child, but proved to be a large intra-mural tumour, about the size of an adult head. Death resulted from peritonitis.

Dr. Gee related a case of sudden death, in which the autopsy revealed a fusiform aneurism of the origin of the aorta. Its lining membrane at one part exhibited a slit extending through the internal and middle coats of the vessel, and at another point the external coat was perforated. Through this opening blood had escaped, and filled the pericardium.

Mr. Harrison brought forward a case, in which an eczematous eruption on both feet, with discolouration of the skin, had resulted from wearing red silk stockings. The patient discontinued wearing them, and was soon well. Three dyes were found in the stockings, of a very injurious character, one being combined with an arsenical preparation.

Mr. Craven described a case of "dislocation of the ankle, with fracture of the internal malleolus." The tendon of the tibialis posticus had slipped from its groove, and got in between the fragments, causing great pain on the least movement. On extending the foot backwards the tendon was felt to get free, and it was then

fixed in its place by plaster, and afterwards by gum and chalk. The fracture united, a slight depression being left, but there was little use of the foot, as much pain was caused by the least exertion.

Mr. Baily mentioned a case in which a difficulty had occurred during delivery, in consequence of the external genital organs having become partly converted into skin. The forceps had to be used, and a partial rupture occurred.

III.—*Papers read.*

1. "On recent improvements in the Operative Surgery of the Eye," by Mr. Bickerton.

The author, after preluding his remarks by a few general observations on the recent advances in this department, aided greatly by the employment of the ophthalmoscope and by scientific research, proceeded to describe the operative treatment of certain diseases of the eye, and exhibited the instruments required. These various operations were described in the following order :— Slitting open the puncta lachrymalia, and the use of Bowman's or Von Graafe's probes for stricture of the lachrymal duct. A mode of destroying 'nævi materni' on the lids was next explained. Dr. Williams' method of treating trichiasis with caustic potash; the most recent mode of operating for entropion; Liebrich's subcutaneous division of muscles for squint; and excision of the eye-ball, performed for the first time by Dr. Stoeber, in 1841, were fully explained. Mr. Bickerton stated that he had no faith in 'abscission of the anterior half of the eye-ball.' The operations for soft cataract, by making a small incision into the cornea and evacuating the lens at different times, and extraction by suction, were next detailed. The author analysed the various operations for hard cataract. Schuft's operation, he stated, had not given good results, and had been replaced by Von Graafe's modified linear extraction. By this latter method, Mr. Bickerton had obtained most excellent results. The various sources of origin of capsular cataract and its treatment were then explained. The object in making an artificial pupil, and the modes of operating, by removing a portion of the iris, by withdrawing a por-

tion of the iris (termed iridodesis), and by incision of the iris, were next discussed. The author strongly advocated iridectomy. He stated that, in performing this operation he seldom gave chloroform, and used Graafe's narrow 'extraction knife.' He had also operated by making a conjunctival flap, as in the 'modified linear extraction' operation, and had had satisfactory results. In considering the relative practical value of iridectomy, division of the ciliary ligament, and division of the ciliary muscle, he expressed the opinion that each was very useful in properly selected cases. The operations for puncturing the eye-ball were fully entered into; and finally the evacuation of effusions between the retina, choroid, and sclerotic.

2. "On Cancrum Oris," by Dr. Glynn.

The author confined the term to those cases in which gangrene of the lips or cheeks is a prominent feature. He did not think it was of the nature of a specific disease; because, 1st—It never attacks children as a distinct disease preceded by characteristic symptoms, though some have affirmed that it does. 2nd—It is always the consequence of some severe illness, especially of the eruptive fevers, and, of these, measles most frequently precedes it. 3rd—It is not infectious, though sometimes epidemic, but only as a consequence of the exanthemata. It very rarely attacks several children in a family simultaneously. It appears to depend upon great deterioration of the blood, springing from a general adynamic state, which may originate from many and various depressing causes. It is much more rarely met with among adults than among children, though not unknown among the former. The facts that the mucous membrane of the mouth is more liable to disease in children, and that measles occur chiefly among them, account partly for their greater liability to cancrum oris. It has been known to occur at so early an age as nine days. It rarely attacks both cheeks, except as the result of mercurial salivation. Girls are most subject to it, and the majority of cases occur in large towns and manufacturing districts. It is emphatically a disease of the poor. Sometimes symptoms almost like scurvy are present, and the author expressed the opinion that it is not improbable

some intimate relation may exist between scurvy and cancrum oris. He did not believe that mercury is the most common cause of the disease, as some think. He considered the gangrene to be the result of a low, erysipelatous inflammation, commencing in the mucous membrane of the mouth. Gangrene of other parts may occur as complications, also pneumonia which is very common, pleurisy, pericarditis, and other diseases of the mucous and serous membranes. The rate of mortality in cancrum oris has been excessively high. With regard to treatment, the author remarked, that before applying escharotics, the general condition should be considered, rather than the local. Nitric acid is useful at first, but its repeated application is injurious. Antiseptics are of great use. Tonics and stimulants constitute the proper internal treatment. The author gave the details of two cases, treated successfully by the use of chlorate of potash wash, and the internal administration of ammonia, chlorate of potash and bark, with beef-tea, wine and brandy.

3. "On Infanticide and Abortion, as suggested Institutions," by Dr. E. Whittle.

The author brought the subject forward, in consequence of the proposition made by the London Dialectical Society, that the medical profession should devise some scheme to limit the number of births, without injury to the health of the married couples, on the assumption that large families were unquestionable evils. He severely criticised the philosophy of Malthus, as well as a work by 'Marcus,' published in 1838, "On the Possibility of Limiting Populousness." The opinion contained in the latter work, viz., "that an excess of population is at once the main evil, and the main cause of all the other evils that affect human society," was advocated by some at the present day. He then alluded to a work published in 1841, by Thos. Doubleday, on "The True Theory of Population," in which the principle was laid down, that in nature a general law exists, whereby fecundity is stimulated by a condition of depletion, and checked by a condition of repletion,—this applying to both the vegetable and animal kingdoms,—and thus the population of a nation is influenced by the social condition of its

people. Several facts from the animal and vegetable kingdoms were adduced in support of this principle, as well as from the state of the world at various periods of its history. The author declared emphatically that medicine is not the science of the day that points to infidelity and vice; and that the members of the medical profession abhor the unnatural projects which have been proposed.

4. "Cases illustrating the relative value of Excision and Amputation," by Mr. Barnes.

The author brought forward a number of cases of excision of the elbow, wrist, hip, knee, ankle, and tarsus, and compared their results with those of amputation. His general conclusions were as follows:—That in making a comparison between excision and amputation, we have to consider, 1st—the relative mortality of each operation. 2nd—the duration and nature of the progress towards recovery. 3rd—the nature of the results. Excision is favourable in the case of the elbow joint, but there are two dangers, viz., bony anchylosis, from the removal of too little bone, and a useless appendage from the removal of too much bone, or the too-early extension of the limb. As regards the wrist, it is very difficult to excise it, without injury to the tendons, which would render the operation comparatively valueless. Excision of the hip-joint is decidedly unfavourable. No general answer can be given in respect to the knee-joint, each case being decided on its own merits; the danger to life is greater in excision than in amputation, and the progress towards recovery is often tedious. Where the disease is the result of injury, or where the constitution is not worn out and exhausted, or of a thoroughly strumous character, excision may be performed. The results of excision of the ankle joint are not favourable, and it is a very difficult operation. The cases in which he had excised some of the tarsal bones, all did well.

Mr. Barnes gave the following as his experience of these operations, required for diseased conditions of the several articulations.

Of the elbow joint he had had seven excisions, and all recovered.

The wrist joint he had partially excised once.

The hip joint he had excised twice, and both cases died; while in one instance he had amputated through the joint with success.

The knee joint he had excised six times, with two recoveries. He had amputated above or through the joint in seventeen instances, of which twelve recovered.

In one instance he had excised the ancle with success; of eight amputations below the knee, four recovered.

He had excised the tarsal bones (os calcis, cuboid, and cuneiform bones), and all these cases recovered.

Of thirteen amputations of the ancle joint (for the most part according to Mr. Syme's method), eleven made good recoveries, and two died.

5. "On Cod Liver Oil as a remedial agent in Typhus Fever," by Dr. GEE.

The author first entered into the question of the nature of typhus fever, the chemical changes accompanying it, and the objects aimed at in its treatment. In referring to the chemical changes which take place in typhus fever, Dr. Gee summed them up as consisting in a rapid and an inordinate metamorphosis and destruction of the tissues of the body, without an equivalent reproduction. Hence there is a great rise of temperature, with enlarged excretion of urea, uric acid, and probably carbonic acid. The result is that the patient performs an increased amount of work, with a semi-paralysed nervous system, with his blood contaminated by an excess of disintegrated tissue, and with a diminution of food, and impaired assimilative power. He remarked that he had given cod liver oil at the Fever hospital during the last few months, with the object that, having an affinity for oxygen, it might withdraw its action from the tissues, and afford a pabulum on which it might expend its energy, and thus relieve the system of a great source of danger; it would also be a source of nutrition, and thus there would be a conservation of vital and physical force. He first tried inunction, but afterwards gave it internally in drachm doses, with dilute hydrochloric acid (12 minims), mucilage, and tincture of orange-peel and water every one or two hours. The diet consisted of milk and beef-tea, with arrowroot. The author gave a brief history of eleven cases so treated, all of which recovered, convalescence taking place in from

eleven to eighteen days. He believed that since this treatment had been adopted, the recoveries had been above the average and the stimulants reduced two-thirds or three-fourths, while rapidity of convalescence has been very marked.

6. "On Lumbar Colotomy, in special reference to cases of Vesico-intestinal Fistula," by Mr. HARRISON.

The author gave a full account of the case of a lady in which he had been consulted, in whom a fistulous communication had been established between the bladder and the intestinal canal. Fœces passed in the urine, the bladder was very irritable, and there was intense pain over it when flatus was passed. Micturition was very distressing. The patient was very emaciated and enfeebled. An examination was made with the endoscope, and an opening about the size of a sixpence was seen a little to the left side of the fundus of the bladder. It was considered to be non-malignant, and the author believed it was due to dysenteric inflammation, from which the patient had suffered long and severely. It was determined to perform lumbar colotomy, the advantages anticipated from the operation being—1st, the alleviation of the distressing pain from flatus entering the bladder; 2nd, the contraction, if not complete closure, of the opening, if fœces were prevented from passing through it. A full description of the operation was given. The difficulties likely to be met with were also alluded to—1st, delay in finding the gut, owing to its being in a contracted state; 2nd, the peritoneum forming a distinct meso-colon, instead of being merely reflected over the front of the intestine. The patient experienced relief from the operation, but next morning became excited and tremulous, and afterwards fell into a state of syncope, from which she never rallied, and died about twenty-six hours after the operation. No post-mortem examination was permitted.

7. "Further Observations on the Use of Carbolic Acid, in Surgery," by Mr. HAMILTON.

He classified the cases in which carbolic acid has been used as—1st, those diseases and injuries in which repeated trials have satisfactorily established its superiority over every other treatment, when used in accordance with certain definite principles;

2nd, those where the evidence as to its effects are contradictory; 3rd, where it is injurious. The first division includes — 1, compound fractures; 2, injuries to joints, where the joint has been opened; 3, incised wounds; 4, gun-shot wounds; 5, large abscesses. The author gave the history of three severe cases, which he had treated successfully by carbolic acid. One was a case of wound into the knee joint, seen for the first time on the third day after the accident. The second was an extensive wound across the wrist, caused by machinery. The finger could be passed into the joint, and the carpal bones were found loose and displaced. The third patient had a wound, four inches long, on the side of the forehead, with fracture of the frontal bone. He considered that experience had fully borne out its value in the cases mentioned under the first class, and that all failures were due to a defect in the mode of carrying out the principle. The author noticed that the season of the year affects the results in this mode of treatment, and that in Autumn, when the air of the hospital was vitiated, suppuration did not appear to be so much kept in check by the acid, though it still had great power in preventing pyœmia or phlegmonous erysipelas. The second division contains burns and scalds, morbus coxæ, psoas abscess, sloughing wounds, syphilitic sores, chronic ulcers, sinuses and ulcers connected with carious bones, carbuncle, diphtheria, strumous ophthalmia, ophthalmia tarsi, and certain skin diseases. The author then made some observations on the 'germ theory,' which is the foundation on which the carbolic acid treatment is based. He remarked that it is probable there are several forms of germ-life, capable of producing distinct diseases, but that they cannot all be neutralised by this one agent, there being other substances destructive of them, at present unknown to us.

8. "On the Treatment of Puerperal Convulsions," by Dr. Steele.

The treatment of this disease has been the subject of much dispute, owing to the different views held as to its pathology. With regard to blood-letting, the author considered it in some cases a remedy of great efficiency, in others equally powerful for

evil. One main object of this treatment is to diminish the quantity of blood in the vessels, and thus to relieve congestion of the brain and spinal cord. Hence it is useful in the simpler forms of this affection, dependent chiefly upon stimulation of the spinal cord, by excess of blood, or upon the mechanical pressure exerted by the blood on that organ, together with the counter-pressure of the distended brain on the medulla oblongata. It is indicated in general fulness of the vascular system, and where, during the violence of the fits, there is extreme congestion and pressure on the vessels of the head and neck. When albuminuria or uræmia is present blood-letting is not well borne, but it is sometimes of service, if judiciously employed, by eliminating the *materies morbi*. As regards '*artificial delivery*,' the plan formerly recommended, to empty the uterus in all cases as speedily as possible, is as dangerous in practice as it is unsound in principle. It is only when the presence of the fœtus in the uterus is the chief exciting cause, that its removal can do any good. No arbitrary rule can be laid down as to the mode of delivery, but the use of the forceps is preferable, if it can be applied. Chloroform is useful in many cases, if given judiciously, and not allowed to supersede the use of other means. In the course of the paper, the author gave the details of cases, illustrating the various modes of treatment.

9. "On Modern Theories about Lateral Curvature of the Spine," by Mr. Banks.

The writer began by pointing out the pathological differences between antero-posterior and lateral curvature, insisting strongly upon the recognition of the fact that in the former there is a distinct disease of the spinal bones, which, if unchecked, goes on to their ultimate destruction; while in the latter there is no such disease, and it is only in advanced cases that any absorption of the vertebræ occurs, and then simply from the effects of pressure. The muscles are at fault; hence, he argued, the impropriety of all stiff mechanical supports, which, although for the time comfortable to the patient, tend ultimately to increase the evil by leading to total inaction and consequent atrophy of the spinal muscles. The object of treatment then should be to strengthen the muscles

which are weak; and to this end indiscriminate gymnastics are certainly not suited, but the greatest care should be taken to prescribe only those exercises suitable to the case. In order to make it clear what these should be, he entered into a description of the mode of production of lateral curvature, its comparative frequency in the two sexes, the age at which it occurs, &c., and criticised Mr. Barwell's idea of the cause of primary dorsal curvature being the preponderance of action of one serratus magnus muscle over the other, leading at first to rotation of the vertebræ and then to curvature of the spinal column. This idea seemed extremely ingenious, and while *per se* not sufficient to account (in the writer's opinion) for the prevalence of dorsal curvature in young females, and its occurrence so frequently upon one side, it yet must certainly form one of the several causes which produce the effect in question. The practical part of the paper was mainly occupied with a description of Mr. Barwell's method of treatment by his spinal elastic bandage, the use of a sloping seat, and certain forms of gymnastics. To these the writer had given a very fair trial, and he thought the principles of treatment laid down by Mr. Barwell were the best proposed; and he felt certain that the patients upon whom he had employed this plan of treatment had been greatly benefited by it.

10. "On the Administration of Carbolic Acid in Enteric Fever," by Dr. Parsons.

After alluding to the different views held at the present day, as to whether the diarrhœa should be stopped or not, the author observed that there were two kinds of diarrhœa in enteric fever, of totally different characters, one occurring in the early part of the disease, and the other from the tenth to the fourteenth day. The first form is best treated by mineral acids, calomel, or a combination of grey powder and Dover's powder; but, in the second form, carbolic acid is of great value. It is useless in ordinary diarrhœa. The author had given it in several cases, in the form of the glycerine of carbolic acid (in doses of 15 ms. for adult), with mucilage, chloric ether, and peppermint water. He remarked that, in all the instances in which he had administered carbolic acid, the

disease had not extended to any other members of the families, and he attributed this to the fact that its germs were destroyed before they left the body. He claimed for it the following properties: 1st, that, after the ulceration of Peyer's glands, it arrests the tendency to perforation; 2nd, that it promotes rapid and healthy cicatrisation; 3rd, that it lessens the liability to ulceration; 4th, that it restrains excessive purging, without preventing the natural elimination of the disease; 5th, that its internal administration is the best preventive to the propagation of this disease. He did not think the compound salts of carbolic acid, recently recommended, are useful. In conclusion, the author briefly alluded to the value of carbolic acid in the vomiting of pregnancy, sarcinæ ventriculi, and trichinous disease.

11. "On Superfœtation," by Dr. LIGHTBOURNE (communicated by Mr. BAILY).

The author stated his belief in the possible occurrence of 'superfœtation;' and remarked that many so-called cases of 'superfœtation' were merely 'blighted ova,' of which a very remarkable specimen was exhibited, and a full account given.

In this case, nine weeks after the birth of the last child, on December 24th, 1867, severe hæmorrhage occurred, which gradually abated and assumed the character of the menstrual flow. The following birth, when the specimen was expelled, took place on November 25th, 1868, and the author believed that pregnancy took place so shortly after the hæmorrhage, that this virtually destroyed the growth of the half-formed specimen, by partially destroying uterine activity, and the power of supporting two ova in a healthy condition. Moreover, the interval between the former birth and this impregnation was so short, as to materially affect the requsite amount of development to complete two normal and healthy children. The specimen was first discharged in the form of a round mass, of about the size of a newly born child's head, and weighing $20\frac{1}{2}$ oz. It retained its attachment to the interior by a cord, which resembled a string of membranes, attached to the inner end of which was a fleshy mass resembling a placenta. There had been a discharge of liquor amnii before the specimen was

expelled, and hœmorrhage accompanied each pain. A second bag of membranes was felt, which soon ruptured, and a large quantity of liquor amnii escaped, when a breech presentation was detected, and a still-born, well formed child was brought forth. The patient made a good recovery.

ABSTRACT OF THE PROCEEDINGS OF THE LIVERPOOL NORTHERN MEDICAL SOCIETY, FOR 1868.

We select the following as possessing special interest from among the—

I.—*Pathological Specimens exhibited.*

By Dr. Nottingham.

A mass of large hydatiform cysts, removed by ovariotomy. The patient was a married woman, aged 30. She had one child, and attributed the disease to a kick received in the abdomen two years previously. The peculiar semi-fluid character of the enlargement rendered the diagnosis between ascites and ovarian disease somewhat obscure. At the operation it was found that there were extensive adhesions to the liver and diaphragm. The patient made a very good recovery.

By Mr. Harris.

1. A specimen of diseased liver, apparently resulting from rupture of some of the hepatic vessels two years prior to decease. The symptoms were rigors, followed by pain and fulness in the right hypochondrium and epigastrium, with vomiting of a quantity of dark grumous fluid; febrile symptoms, etc.

2. Several gall-stones, removed from a person in whom, during life, their presence had not been suspected. There was fatty degeneration of the heart, liver, and kidneys; and a layer of adipose tissue, four inches thick, existed in the abdominal wall.

By Dr. Parker.

Specimens of urinary calculi, each having a hair for its nucleus.

By Dr. Parsons.

1. A left superior maxilla, which had become necrosed in consequence of injury to the alveolar process, opposite the first molar tooth, eleven years previously. With the exception of the nasal process, the bone came away entire.

2. Two feet, spontaneously amputated during the course of 'senile gangrene.' The case had been attended by him 13 years ago, but the patient died only very recently.

By Dr. Goodall Jones.

The larynx, trachea, and pharynx of a patient who had recently died of an abscess which appeared to have originated in the thyroid body, and which burst into the trachea.

By Dr. Charles Hill.

A portion of melanotic liver, from a patient who had had excision of the right eye, performed for melanosis of that organ. The liver weighed 15 pounds.

By Dr. Irvine.

A constricted pylorus, barely admitting the handle of a pen. The chief symptom during life was severe jaundice.

By Dr. Colles Anderson.

1. Two calculi, removed from the urethra of a man who had been suffering for three years from urinary fistula.

2. A fibro-cystic tumour, removed from the parotidean region. It had existed for 9 years. No facial paralysis resulted from the operation.

3. The uterus of a woman who had given birth to two living children, and had aborted six months previous to decease. It presented a white, cartilaginous appearance. The cavity was nearly obliterated, and the os with difficulty discovered. The uterus was adherent to the rectum.

By Dr. O'Connor.

Melanosis of the left lobe of the liver, and greater portion

of the stomach. It was noticed that, from the margin of the fifth rib to the crest of the ilium, on the surface corresponding to these organs, the body had retained its natural caloric eighteen hours after death, while the rest of the body was perfectly cold.

II.—*Cases related or exhibited.*

By Mr. Harris.

1. "Case of *periodic hæmorrhage from the urethra*, without any appreciable cause." At the *post-mortem* examination, an ulcer, about the size of a half-crown, was found a little to the right side and above the neck of the bladder. A large coagulum was present in the bladder.

2. "Two cases of *suppuration of ovarian cysts after tapping*." In the first case, the operation was performed without the previous introduction of the catheter, the patient having stated that she had just made water. The fundus of the bladder was wounded, and retention of urine ensued. The urine became mixed with the pus of the cyst, as proved by the smell of urine in the discharge from the wound, and by the presence of pus in the contents of the bladder. The patient died thirty months after the operation. The second case occurred in a married woman, aged 33. The fœtid character of the discharge necessitated the dilatation of the wound. The cyst was injected about once a week, with warm water and a little carbolic acid. The discharge was profuse for three months, and only ceased entirely seven months after the operation. The catamenia were restored, and the patient recovered perfectly. A tumour, the size of an orange, remained in the place of the cyst.

3. A girl was introduced, 9 years of age, having a congenital varicose tumour on the left side of the neck, extending from the mastoid process to the clavicle. No operative interference seemed advisable, as there was such an extensive vascular anastomosis.

4. "Case of epilepsy in connection with cyanosis and albuminuria." The patient was a female, aged 47, with congenital

cyanosis. A succession of epileptic fits terminated her existence in a week.

By Dr. Matthew Hill.

"Case of irregular ossification," in a girl aged 6 years. The muscles of the arm and thorax were ossified, and the shoulder- and elbow-joints were anchylosed.

By Dr. Nottingham.

1. A patient was introduced, on whom excision of the knee-joint had been performed. The limb was 6 inches shorter than its fellow, but, by means of an iron step, he was enabled to walk with great comfort.

2. A boy was brought forward, aged 13 years, whose hip-joint had been excised $4\frac{1}{2}$ years previously. There was a very satisfactory joint; rotation, flexion, and extension being well performed. There was about $3\frac{1}{2}$ inches shortening, but, with the aid of an iron step, the patient could walk for miles without any sense of fatigue.

By Mr. A. M. Bligh.

"Case of catarrh of the bladder, in which the whole of the mucous coat was expelled." Retention of urine followed instrumental delivery, and incontinence succeeded. The catheter was passed frequently for a few days, and afterwards it was allowed to remain in altogether. Mucilaginous drinks were freely given, with hyoscyamus and pareira brava. A membranous shred was seen projecting from the urethra, and, by gentle traction upon it, the whole of the mucous coat of the bladder was removed, studded with numerous scintillating crystals. Mucilaginous injections were then used to protect the submucous coat, and injections of tannin to arrest hæmorrhage, with opium to relieve pain. The patient recovered, and has since given birth to another child.

By Dr. Parsons.

1. A patient, aged 30, with complete occlusion of the posterior nares. There was total loss of smell, and a dry state of the Schneiderian membrane.

2. "Case of cholera," treated by capsicum, followed by castor oil. The capsicum was given in a single dose of 30 grains, in half a tumblerful of water, with the view of preventing impending collapse. Dr. Parsons had found this treatment very successful during the epidemic of 1866.

By Mr. Sheldon.

"Case of spina bifida," in a child 11 weeks old. The child was healthy, but the tumour, which occupied the sacral region, was growing rapidly. In connection with this case, Dr. Irvine remarked that he had operated successfully for spina bifida, in the lumbar region, in a child a week old, and it had lived for $2\frac{1}{2}$ years.

By Mr. Rowlands.

"Two cases of puerperal fever," successfully treated by injecting the vagina and rectum with diluted carbolic acid (1 part in 80 of water). Turpentine stupes were applied over the abdomen, and opium given internally.

By Mr. William Burrows.

"Two cases of puerperal fever," successfully treated by antiseptic injections, together with the internal administration of opium. In one case, Condy's fluid (1 to 40) was used, and in the other carbolic acid. Mr. Burrows preferred the former, because its inodorous character enabled him to say when the fœtor was corrected. He believed that antiseptic injections, by correcting depraved uterine secretion, tended materially to arrest the progress of the disease.

By Dr. Goodall Jones.

"Case of catalepsy," which terminated fatally on the 13th day. The cataleptic state was preceded by a silent, morose, and fretful manner. There had been no constitutional disturbance, nor menstrual irregularity, to account for this. Strong galvanic currents failed to produce any muscular action.

By Dr. Samuels.

"Twenty-one cases of enteric fever," of which 10 had occurred in children, and 11 in adults. Only one death resulted. The eruption was present in nearly every case, and in many of them as early as the third day.

By Dr. Speers.

A child was brought forward, aged 3 years and 9 months, suffering from extensive phagædenic ulceration of the parietal region. The whole of the squamous portion of the temporal bone was denuded, and a good part of the mastoid.

By Mr. Parker.

1. "Case of ovariotomy, performed in this town, in 1843," by the late Mr. Banner. Death occurred on the third day, from peritonitis.

2. "Case of labour, in which the descent of the head was arrested by the presence of a tumour occupying the recto-vaginal pouch." The wall of the rectum appearing to be thinner than that of the vagina, the contents of the tumour were evacuated through it, and about 30 ounces of thick glutinous fluid came away. Delivery of a still-born child ensued 19 hours afterwards. The discharge gradually became offensive, and the patient succumbed to hectic 6 months after her confinement.

By Mr. Townson.

"Three cases of erysipelas," which occurred in different members of a family, tending to show the infectious character of the disease. In each, the disease ran a precisely similar course. The treatment consisted of tartar emetic and low diet, with the local application of flour. Mr. Townson deprecated the use of stimulants in this disease, as, in his experience, it led to delirium. A discussion took place upon the treatment of this disease, several members dissenting from Mr. Townson's view.

III.—*Papers read.*

1. "On the use of Large Doses of Tincture of Digitalis," by Dr. Parsons.

The author related various cases of delirium tremens, in which he had used it; and the result of his experience was, that it is beneficial in those cases only where there is low muttering delirium, with a weak, flickering, and irregular pulse. Where there is delirium ferox, with a bounding pulse, large doses of digitalis do no good. He drew attention to the efficacy of digitalis in menorrhagia, in the insomnia of certain forms of cardiac disease, and, above all, in the critical stage of typhus, when a timely relief often enables the patient to resist the final effort of this disease. A tabulated report was submitted of the cases in which the author had used tincture of digitalis in half-ounce doses. With regard to its action, he believed that in small doses it is first a stimulant, and subsequently a depressant; while, in half-ounce doses, it is a most powerful stimulant, especially to the sympathetic system, as instanced by its power of increasing the contraction of the heart and uterus, by its diuretic properties, and also by its purgative and emetic action.

2. "On the administration of Oil of Sandalwood, in Gleet," by Mr. PARKER.

He recommended its use in all chronic cases of this affection, and related instances in which he had employed it with great advantage.

3. "On a New Preparation, the Lactate of Iron and Quinine," by Dr. KIRK.

He stated it to be specially adapted for those cases where chalybeates were indicated, and where, from derangement of the digestive functions, the ordinary ferruginous compounds were not tolerated.

4. "Cases of Puerperal Convulsions, with remarks on the various remedies used in the treatment of this disease," by Dr. O'CONNOR.

He related three cases, each representing a different type of this disease, the *hyperæmic*, the *anæmic*, and the *apoplectic*. In considering the different remedies, he deprecated *stimulating enemata* and *purgatives*, because they produced excitation of the uterus, which he considered to be the proximate cause of the disease. *Tartar emetic* he deemed inapplicable, unless the stomach was

overloaded; in continued nauseating doses he believed it to be injurious. *Chloroform* is an invaluable remedy in anæmic and hysteric convulsions, when there is excessive pain, as in the slow dilatation of a rigid os; but it is not admissible in the hyperæmic form, where stertor and stupor continue in the intervals between the paroxysms. *Opium* is suitable in similar cases. The author expressed himself strongly against delivery by turning, except in cross births, and believed that delivery by the natural expulsive powers was the safest. In cases where the head has descended into the pelvis, application of the forceps or delivery by perforation is advisable, seeing that when the os is fully dilated, such interference does not increase the excitation of the uterus.

5. "On Climatology," by Dr. JOHN BLIGH.

6. "On Superfœtation, with cases illustrating the possibility of its occurrence, by Dr. IRVINE.

7. "On the recent Epidemic of Enteric fever in Bootle," by Dr. MATHEW HILL.

Of 432 cases only eight died, but many of the so-called recoveries would ere long succumb to some secondary disease. The ages at which the cases occurred were as follows:

Below 5 years.	Between 5 and 10.	Between 10 and 20.	Between 20 and 30.	Between 30 and 40.	Between 40 and 50.	Above 50.
108.	100.	87.	83.	35.	13.	6.

The author believed that he had succeeded in arresting the progress of many cases by early treatment. After detailing the symptoms usually found in such cases, he dwelt particularly upon the appearance of the tongue, which he said was a true index of the stage and progress of the disease. His treatment consisted, in the early stages, of warm baths and diaphoretics, then quinine, nitro-muriatic acid, chlorate of potash, Dover's powder in excessive purging, with occasional doses of opium to procure sleep; also sinapisms, or turpentine stupes, in tympanitis. He gave bland nutritious diet in the early stage, coupled with stimulants in the advanced stages. Stimulants were best administered in milk and egg-julep. With good nursing, few relapses occurred. The most frequent complications and sequelæ were sudamina, pustular and furuncular eruptions, parotid abscesses, blistering of

the skin, and hæmorrhage from the bowels. One case died of hæmorrhage from the pharynx.

8. "On Cases of Chorea, treated by Conium," by Dr. JOHN BLIGH.

He considered conium specially applicable in such cases, and he administered it in doses of from 3i. to 1 oz. of succus conii for long periods. He did not believe it to be a cumulative medicine.

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